

TOSHIBA

FILE NO. A10-9802

SERVICE MANUAL

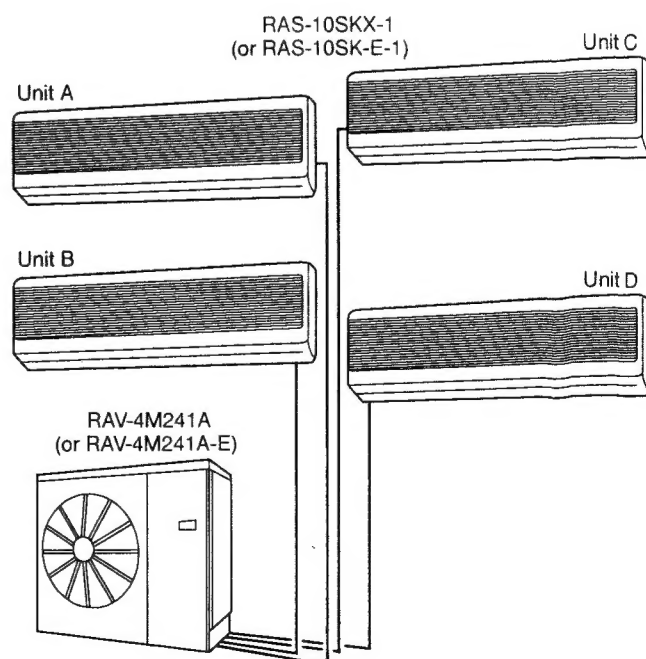
ROOM AIR-CONDITIONER SPLIT WALL TYPE

RAV-4M241A

(Combination with RAS-10SKX-1)

RAV-4M241A-E

(Combination with RAS-10SK-E-1)



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1. SPECIFICATIONS

Item			Model	RAV-4M241A / RAV-4M241A-E					
Operation			Unit	2 indoor unit		4 indoor unit			
				A or B	C or D	A	B	C	D
			BTU/h	9, 300 x 2		6, 100 x 4			
Cooling capacity			BTU/h	18, 600		24, 400			
			kW	5,4		7,1			
Power source			Phase	Single					
			V	220 — 240					
			Hz	50					
Power consumption			kW	2,39		2,5			
Power factor			%	98		98,8			
Running current			A	10,6		11			
Starting current			A	58		58			
Operating noise (SPL) Outdoor unit			dB (A)	53					
Refrigerant			Name of refrigerant		R-22				
			Charge volume	kg	0,9 (A or B) + 0,9 (C or D)				
			Additional charge		Chargeless				
			Refrigerant control		Capillary tube				
Inter connecting pipe			Gas side size	mm (in.)	ø9,52 (3/8")				
			Coupler style		Flare connection				
			Liquid side size	mm (in.)	ø6,4 (1/4")				
			Coupler style		Flare connection				
			Standard length	m (ft)	7,6 (25)				
			Maximum length (One-way)	m (ft)	A + B < 15 (48), A – B < 8 (25,6), C + D < 15 (48), C – D < 8 (25,6) A or B or C or D < 10 (32)				
			Minimum length (One-way)	m (ft)	2 (7)				
			Max. height	Indoor unit higher	m	5 (16)			
Outdoor unit higher	m	5 (16)							
Condensed drain pipe size (OD)			mm	ø32					
INDOOR UNIT MODEL				RAS-10SKX-1/RAS-10SK-E-1					
OUTDOOR UNIT MODEL				RAV-4M241A/RAV-4M241A-E					
Dimensions			Height	mm	790				
			Width	mm	880				
			Depth	mm	310				
Net weight			kg (lbs)	70 (154,3)					
Heat exchanger type				Finned tube					
Condenser fan type				Propeller fan					
Air volume			m³/h (CFM)	2,700 (1,600)					
Fan motor output			W	63					
Compressor			Model	PH160X2-4L x 2					
			Output	W	1,100 x 2				
Safety device				Fuse, inner overload-relay					

Specifications are subject to change without notice.

Note 1:

- Cooling capacity is based on the following temperature conditions. [Condition A]

Evaporator air inlet temperature		Condenser air inlet temperature
27°C DB (80°F DB)	19,0°C WB (66°F WB)	35°C DB (95°F DB)

Note 2:

- These mean equivalent length.

Note 3:

- Operating range of the units

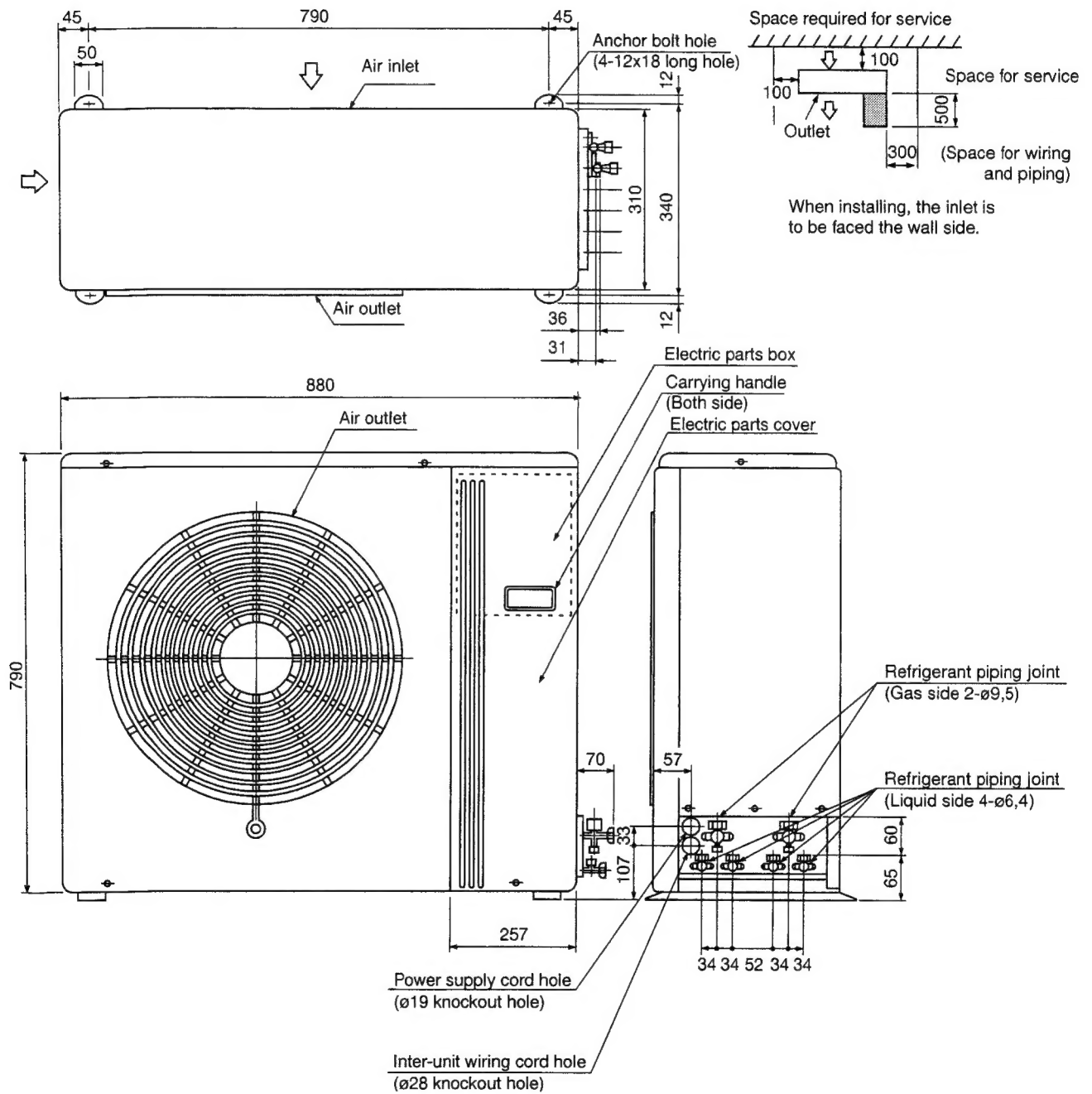
	Evaporator air inlet temperature	Condenser air inlet temperature
Maximum	30°C DB, 22,5°C WB (86°F DB, 73°F WB)	43°C DB (109°F DB)
Minimum	21°C DB, 15,5°C WB (70°F DB, 60°F WB)	21°C DB (70°F DB)

Remark:

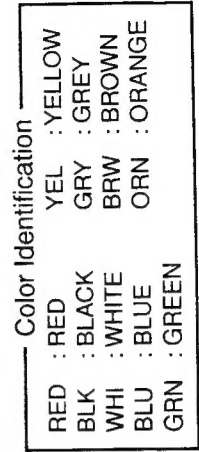
- Be sure to refer to the service manual file No. A03-9801 (or A00-9708) for the indoor unit RAS-10SKX/10SK-E (or RAS-10SKX-1/RAS10SK-E-1) to be connected.

2. CONSTRUCTION VIEWS

Outdoor Unit



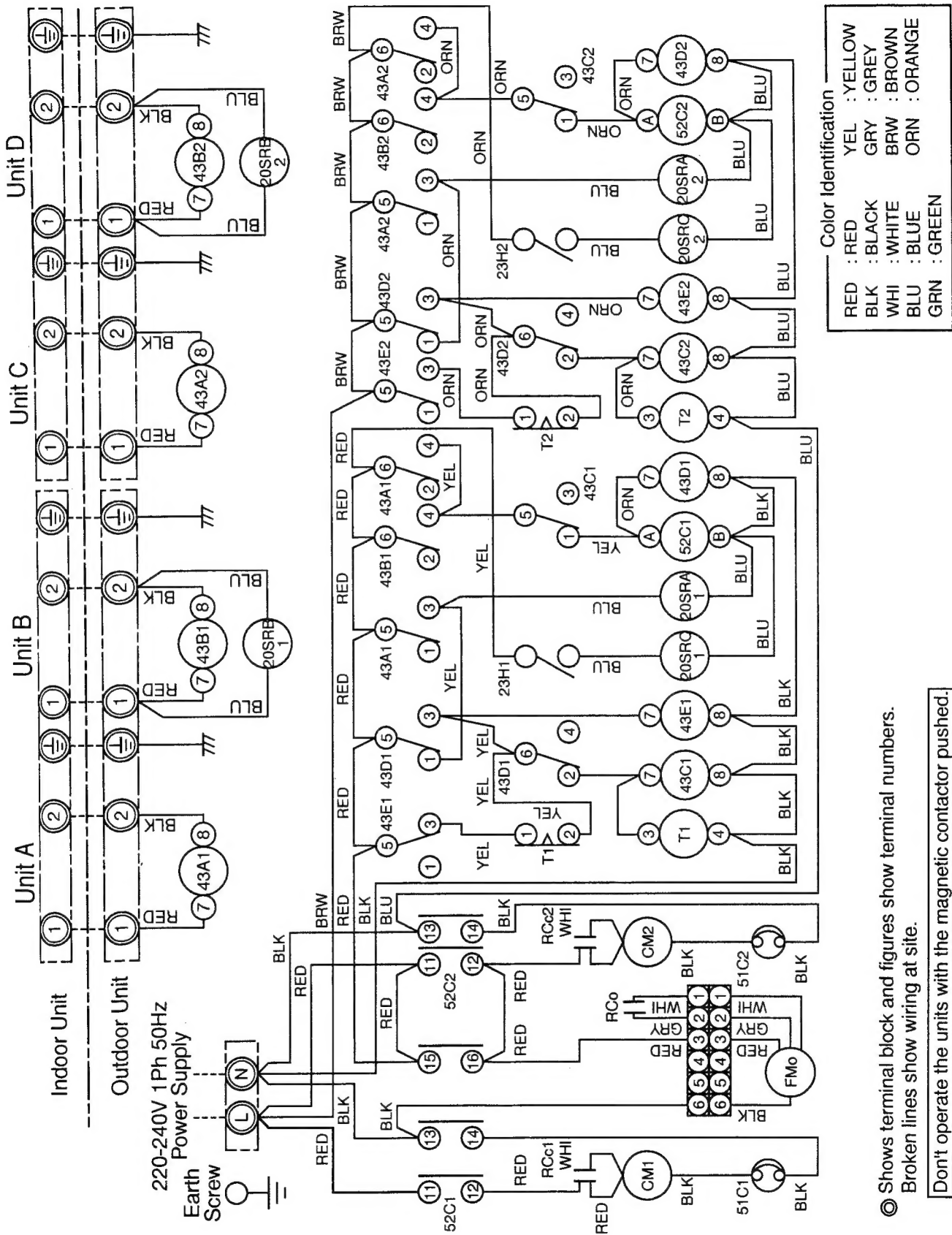
RAV-4M241A



© Shows terminal block and figures show terminal numbers.
Broken lines show wiring at site.

Don't operate the units with the magnetic contactor pushed.

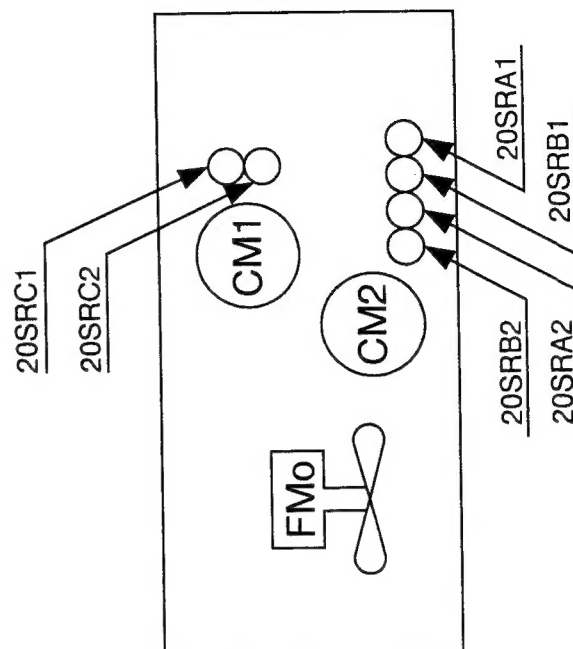
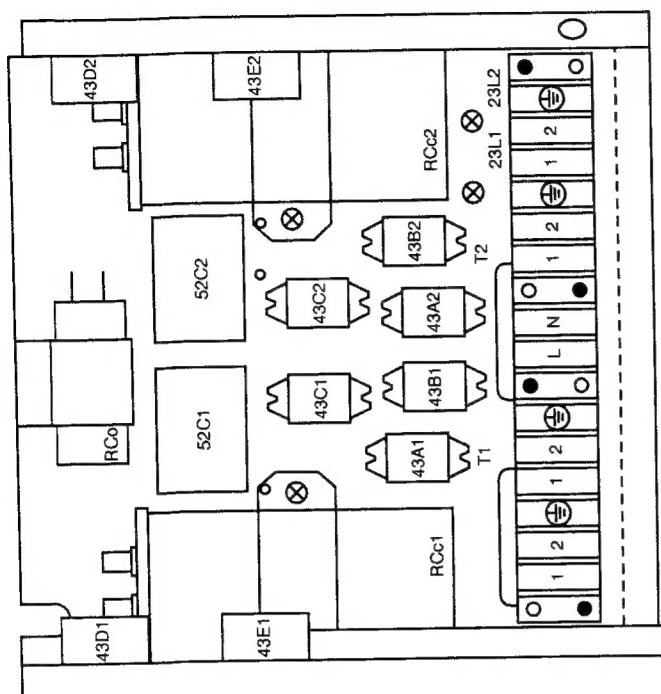
RAV-4M241 A-E



© Shows terminal block and figures show terminal numbers.
Broken lines show wiring at site.

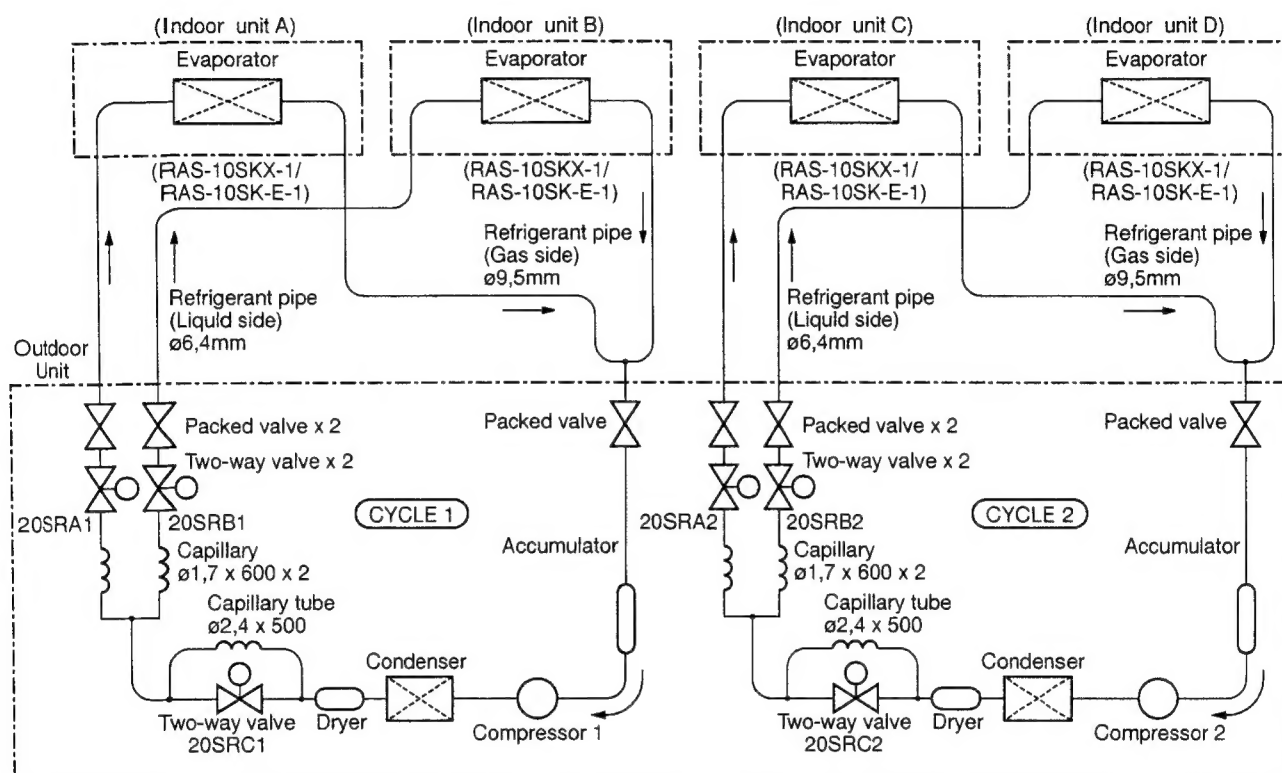
Don't operate the units with the magnetic contactor pushed.

4. SPECIFICATIONS OF ELECTRICAL PARTS



Symbol	Parts name	Type	Specifications
CM1, 2	Compressor 1, 2	PH160X2-4L	Output 1,1kW, 2pole, 1ø, 220-240V, 50Hz Winding resistance: Main coil 2,2Ω, Aux. coil 3,5Ω
FMo	Fan motor	STF-200-63B	Output 63W, 6pole, 1ø, 220-240V, 50Hz
52C1, 2	Magnetic contactor	VC20FA	AC 240V 3P
RCc1, 2	Capacitor	MT-40MP355W	For compressor 1, 2: PH160X2-4L, AC 400V, 35μF
RCo	Capacitor	EAG45M355UF1	For fan motor, AC 450V, 3,5μF
20SRA (1, 2) ~ 20SRC (1, 2)	Solenoid coil (2-way valve)	NEV AC240	AC 220-240V
43A (1, 2) ~ 43E (1, 2)	Relay	LY2F	Coil 220-240V, 50/60Hz
T1, 2	Thermal timer	230-B-206-4BFP1	AC 220-240V, 3-min. (Delay)
51C1, 2	Overload relay	MRA99420	Ultimate tripping, 8,4A (Terminal 1 - 2) at 100°C Tripping temp: 135 ± 5°C Resetting temp: 75 ± 11°C
23H1, H2	Bimetal thermostat	CS12	110°C ON, 95°C OFF

5. REFRIGERANT PIPING DIAGRAM

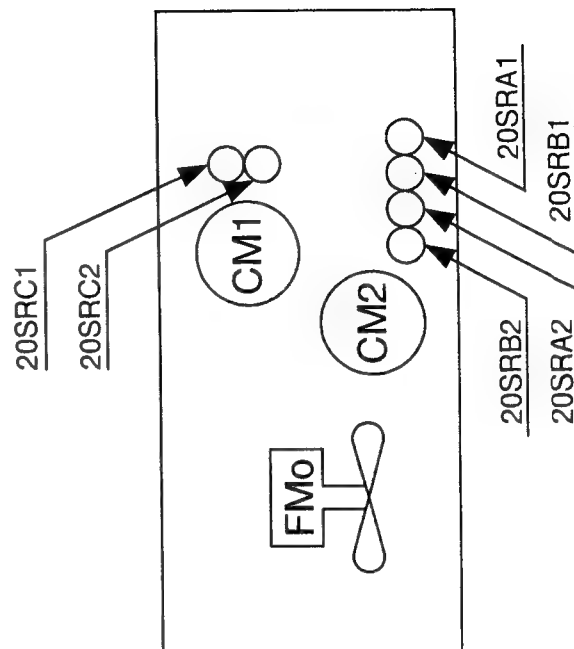
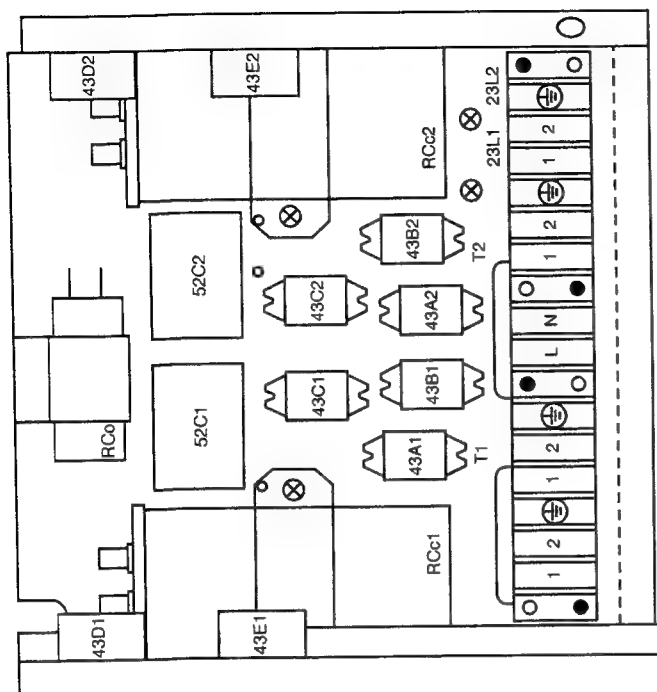


		Standard pressure P1 (kg/cm ² G)	Ambient temp. conditions DB/WB (°C)	
			Indoor	Outdoor
ONE ROOM	Standard	5,8	27/19	35/24
	High pressure	6,8	32/22,5	43/26
	Low pressure	4,5	21/15,5	21/15,5
BOTH ROOM	Standard	4,2	27/19	35/24
	High pressure	4,9	32/22,5	43/26
	Low pressure	3,1	21/15,5	21/15,5

Compressor	Refrigerant rated volume
PH160x2-4L x 2	0,9kg x 2

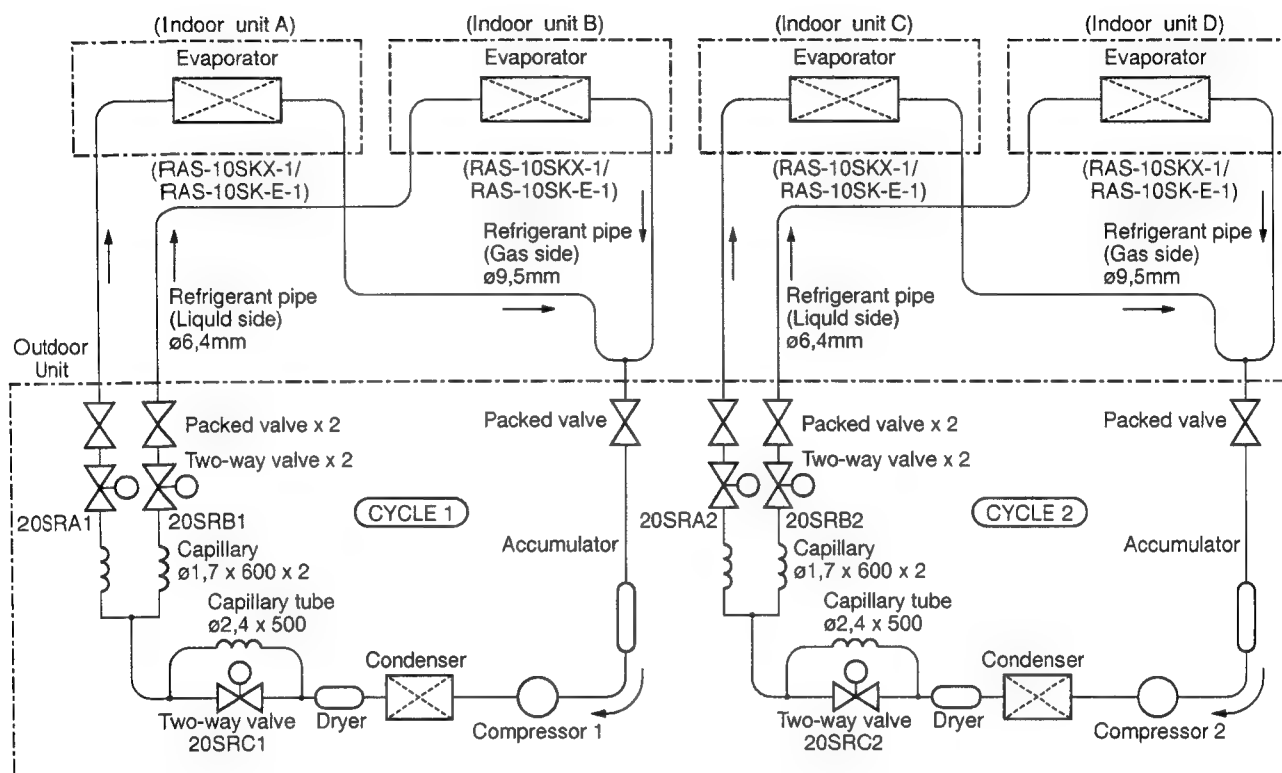
Remark:
Interconnection piping length: 7,6m

4. SPECIFICATIONS OF ELECTRICAL PARTS



Symbol	Parts name	Type	Specifications
CM1, 2	Compressor 1, 2	PH160X2-4L	Output 1,1kW, 2pole, 1ø, 220-240V, 50Hz Winding resistance: Main coil 2,2Ω, Aux. coil 3,5Ω
FMo	Fan motor	STF-200-63B	Output 63W, 6pole, 1ø, 220-240V, 50Hz
52C1, 2	Magnetic contactor	VC20FA	AC 240V 3P
RCc1, 2	Capacitor	MT-40MP356W	For compressor 1, 2: PH160X2-4L, AC 400V, 35μF
RCo	Capacitor	EAG45M355UF1	For fan motor, AC 450V, 3,5μF
20SRA (1, 2) ~ 20SRC (1, 2)	Solenoid coil (2-way valve)	NEV AC240	AC 220-240V
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T1, 2	Thermal timer	230-B-206-4BFP1	AC 220-240V, 3-min. (Delay)
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23H1, H2	Bimetal thermostat	CS12	110°C ON, 95°C OFF

5. REFRIGERANT PIPING DIAGRAM



		Standard pressure P1 (kg/cm ² G)	Ambient temp. conditions DB/WB (°C)	
			Indoor	Outdoor
ONE ROOM	Standard	5,8	27/19	35/24
	High pressure	6,8	32/22,5	43/26
	Low pressure	4,5	21/15,5	21/15,5
BOTH ROOM	Standard	4,2	27/19	35/24
	High pressure	4,9	32/22,5	43/26
	Low pressure	3,1	21/15,5	21/15,5

Compressor	Refrigerant rated volume
PH160x2-4L x 2	0,9kg x 2

Remark:
Interconnection piping length: 7,6m

5-1. Refrigerant Piping

5-1-1. Permissible Piping Length and Head

The minimum indoor-unit refrigerant piping length shall be 2m.

Limit the number of bends in the refrigerant piping to 10 or less.

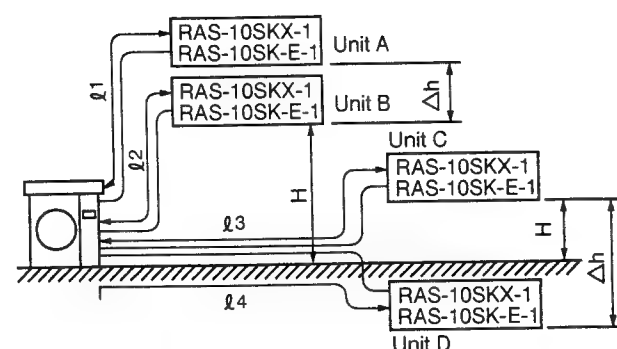


Fig. 5-1

Table 5-1

Model	Connectable indoor unit number	Permissible piping length	Permissible difference pipe lengths	Permissible piping head (H)	Between units A and B piping head (Δh)	Remarks
RAS-10SKX-1 RAS-10SK-E-1	4	15m ($l_1 + l_2$) 15m ($l_3 + l_4$)	8m ($l_1 - l_2$) 8m ($l_3 - l_4$)	5m	1m	Fig. 5-1

5-1-2. Piping Material and Sizes

Table 5-2

Piping material	Model	Piping size (mm)	
		Larger	Smaller
Phosphate deoxidized copper seamless pipes for air conditioners	RAS-10SKX-1 RAS-10SK-E-1	9,5	6,4

5-1-3. Air Purging

- Subject the refrigerant tube of outdoor and indoor units to air purge with a vacuum pump.
- Do not carry out this air purge by using the refrigerant filled in the outdoor unit.
- To handle valves, a 5mm hexagon wrench is needed.

5-1-4. Refrigerant Pipe Connecting Position

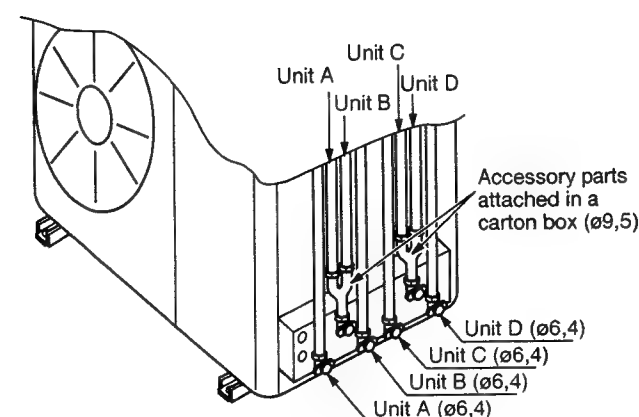


Fig. 5-2

5-1-5. Additional Refrigerant Quantities

Table 5-3

Model	Addition per meter
RAV-4M241A RAV-4M241A-E	No need

6. UNIT INSTALLATION

Service Space

Ensure that there is sufficient space around the outdoor unit for installation and servicing.

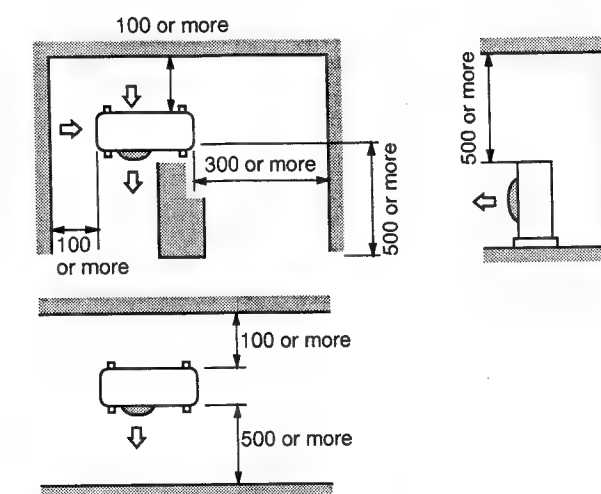


Fig. 6-1

- Do not install in a place that can increase the vibration and amplify the noise level of the units.
- Be sure to fix the outdoor unit with four (4) M10 anchor bolts according to foundation drawings below.

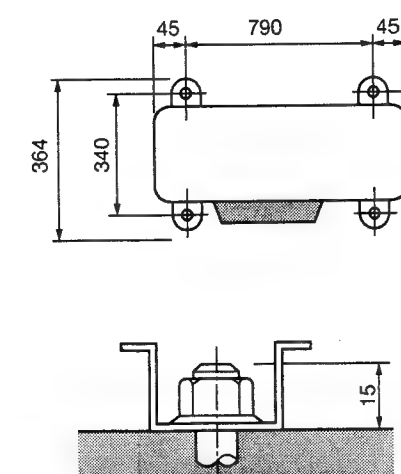


Fig. 6-2

7. OPERATIONAL MATRIX OF ELECTRICAL PARTS

Operating Indoor unit				Parts				Indoor unit P.C. board relay																							
				RY	RY	RY	RY	CM	CM	FM	52	52	43	43	43	43	43	43	43	43	43	20SR	20SR	20SR	20SR	20SR	20SR	T	T1	T	T2
				7A	7B	7C	7D	1	2		C1	C2	A1	C1	D1	E1	A2	B2	C2	D2	E2	A1	B1	C1	A2	B2	C2	1	Con-tact	2	Con-tact
Outdoor unit power ON Indoor unit not operating				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	O	X	X	O	X	X	X	O	X	O	
A				O	X	X	X	O	X	O	O	X	O	O	X	X	X	X	X	O	X	X	O	X	X	X	O	X	O		
	B			X	O	X	X	O	X	O	O	X	X	X	O	O	X	X	X	X	X	O	X	O	X	X	X	O	X	O	
		C		X	X	O	X	X	O	O	X	O	X	X	X	O	X	X	O	O	O	X	X	O	X	X	X	O	X	O	
			D	X	X	X	O	X	O	O	X	O	X	X	X	X	O	X	O	O	O	X	X	X	O	X	X	O	X	O	
A (Thermostat OFF before 210sec.)				X	X	X	X	X	X	X	X	X	O	X	O	X	X	X	X	X	O	X	X	O	X	X	O	O	X	O	
A (Thermostat OFF after 210sec.)				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	O	X	X	O	X	X	X	X	X	O	
B (Thermostat OFF before 210sec.)				X	X	X	X	X	X	X	X	X	O	X	O	X	X	X	X	X	O	X	X	O	X	X	O	O	X	O	
B (Thermostat OFF after 210sec.)				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	O	X	X	O	X	X	X	O	X	O	
C (Thermostat OFF before 210sec.)				X	X	X	X	X	X	X	X	X	X	X	X	X	X	O	X	O	O	X	X	O	X	X	X	O	O	O	
C (Thermostat OFF after 210sec.)				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	O	X	X	O	X	X	X	O	X	X	
D (Thermostat OFF before 210sec.)				X	X	X	X	X	X	X	X	X	X	X	X	X	X	O	X	O	O	X	X	O	X	X	X	O	O	O	
D (Thermostat OFF after 210sec.)				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	O	X	X	O	X	X	X	O	X	X	
A Thermo OFF/B ON (before 210sec.)				X	O	X	X	X	X	X	X	X	O	X	O	X	X	X	X	X	O	O	X	O	X	X	O	O	X	X	
B Thermo OFF/A ON (before 210sec.)				O	X	X	X	X	X	X	X	O	O	X	O	X	X	X	X	X	O	X	X	O	X	X	O	O	X	X	
C Thermo OFF/D ON (before 210sec.)				X	X	X	O	X	X	X	X	X	X	X	X	O	O	X	O	O	O	X	X	O	O	X	X	X	O	O	
D Thermo OFF/C ON (before 210sec.)				X	X	O	X	X	X	X	X	X	X	X	O	X	O	X	O	O	O	X	X	O	X	X	X	X	O	O	

- RY** Indoor unit cooling operation relay output
CM Compressor
FM Fan motor
52C Magnetic contactor for compressor
43 Indoor unit cooling operation relay
T Thermal timer
20SR A1, 2 and B1, 2 Indoor unit changeover two-way valve solenoid coil
20SR C1, 2 Compressor two-way valve solenoid coil OFF at the time of both indoor units in a cycle in operation.

8. TROUBLESHOOTING CHART

Troubleshooting Procedures :

- Following details of "What to be prechecked first", make sure of the basic items.
- When there is no trouble corresponding to above, check in detail the faulty parts following "How to judge faulty parts by symptoms" later.

8-1. What to be Prechecked First

8-1-1. Power Supply Voltage

The power supply voltage must be from AC 198V to 264V. If the power voltage is not within this range, the air conditioner may not work normally.

8-1-2. Incorrect Cable Connection between Indoor and Outdoor Units

The indoor unit is connected to the outdoor unit with three cables.

Make certain that the terminals of indoor and outdoor connectors have been connected properly by the same numbers.

If not connected as specified, the outdoor unit won't operate normally.

8-1-3. Operations not Regarded as Failure (Program operation)

In terms of the control of air-conditioner, the operations shown in Table 8-1 are made as a program operation incorporated in a microcomputer.

If a claim is made about the operation, check it corresponds to the contents in the table.

If it does, it is an indispensable operation for the control and maintenance of the air-conditioner but not a failure of the units.

- **Operations which are not Deemed Trouble**

Table 8-1

Operation of air-conditioner	Description
When the POWER plug of the indoor unit is inserted, the OPERATION lamp blinks.	The OPERATION lamp blinks, indicating that power is turned on. If this happens, press the START/STOP button once, and blink will stop. Power failure also causes the same lamp to blink.
Room temperature is in the range under which the compressor is turned on, but the compressor will not start.	The compressor will not start while the compressor restart prevention timer (three-minute timer) is actuated. This applies also when power is turned on.
Fan speed remains unchanged when the fan speed button is operated in the dry operation.	Fan speed is fixed at Low in the dry operation.
Room temperature is in the range under which the compressor is turned off, but the compressor will not stop.	The compressor will not stop while the compressor on-hold timer (two-minute timer) is actuated.
The compressor will not switch on or off even when the thermostat control is operated in the dry operation.	In the dry operation, the compressor goes on and off at regular intervals, independent of the thermostat control.

8-2. Primary Judgement of Trouble Sources

8-2-1. Role of Indoor Unit Controller

The indoor unit controller receives the operation commands from the remote control and assumes the following functions.

- Measurement of the draft air temperature of the indoor heat exchanger by using the temperature sensor (TA).
- Louver motor control
- Control of the indoor fan motor operation
- Control of the LED display
- Control of the outdoor unit compressor and the outdoor fan motor.

8-2-2. Display of Abnormalities and Judgement of the Abnormal Spots

The indoor unit of this machine observes the operation condition of the air conditioner and displays the contents of the self-diagnosis as block displays on the display panel of the indoor unit.

Table 8-2

Block display	Check code	Self-diagnosis	Check code
OPERATION display blinking (1 Hz)	—	Power failure (When power is on)	—
OPERATION display blinking (5 Hz)	00	Temperature sensor (TA) short/break	00
OPERATION display blinking (5 Hz)	00	Heat exchanger sensor (TC) short/break	08
OPERATION display blinking (5 Hz)	00	Indoor fan lock, abnormality of indoor fan, IC03, D15 short/break	11
OPERATION display blinking (5 Hz)	00	Indoor P.C. board failure	12
OPERATION and TIMER display blinking (5 Hz)	01	Thermal fuse is blown (Indoor fan motor is overheat)	04
OPERATION, TIMER and FAN ONLY display blinking (5 Hz)	03	<ul style="list-style-type: none"> • Gas shortage, other refrigerant cycle trouble • Heat exchanger sensor open/short/break • Overload relay trouble 	09
OPERATION, TIMER and FAN ONLY display blinking (5 Hz)	03	Compressor trouble	18

(1) Judgement from defective operation or abnormal operation

Table 8-3

System	Check		Primary judgement
No reaction on remote control operation	Turn off the power once, turn it on again and try to operate the remote control again.	Remote control is not possible.	The indoor part (including the remote control) is defective.
		Remote control is possible.	OK
The outdoor fan does not rotate	The compressor operates.		The outdoor part is defective. (outdoor fan motor)
	The compressor does not operate.		The inside part is defective.

(2) Self-diagnosis with remote control

With the indoor unit control, self-diagnosis of protective circuit action can be done by turning the remote control operation into service mode, operating the remote control, observing the remote control indicators and checking whether OPERATION lamp blinks (5 Hz).

Note :

- To perform this self-diagnosis, the remote control with the service code of 43069666 is required.

<How to select remote control operation mode>

1) Selecting service mode

Push the switch button provided on rear bottom of the wireless remote control with a tip of pencil for more than 3 seconds.

Make sure the setting temperature "00" is displayed on the display and other display is turned off.

2) Selecting ordinary mode

Push the all clear button (ACL) on the rear bottom of the wireless remote control by a tip of pencil for more than 3 seconds.

Make sure the operation mode display, wind volume display, clock display and setting temperature display are turned on and " : " of the clock display is blinking.

<Cautions when doing service>

- 1) After completion of servicing, always push the all clear (ACL) button to return the operation mode to the normal mode.
- 2) After completion of servicing by the check code, turn off the power once and then turn on the power to reset memorized contents of the microcomputer to the initial status.

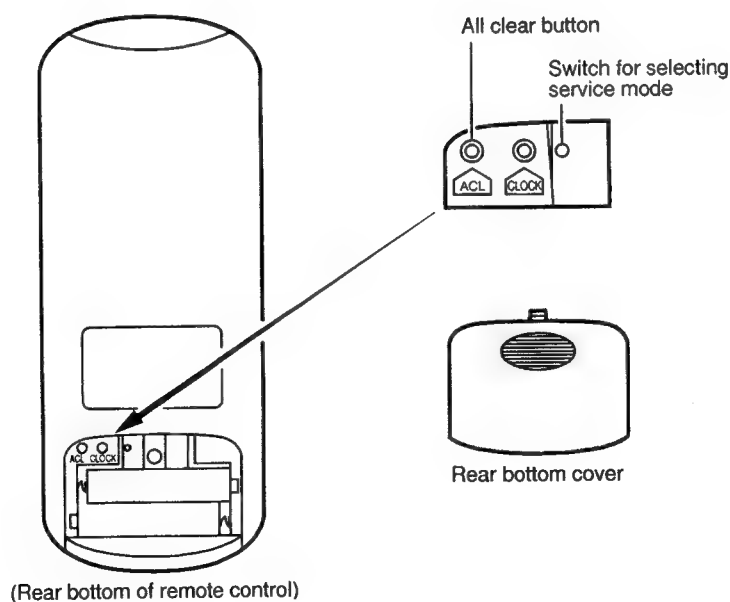




Fig. 8-1

<Self-diagnosis by check codes>

- 1) The self-diagnosis by the check codes is conducted under the block displays of item b)-e).

- 2) Remote control key operation under the service mode is conducted by ON/OFF or TEMP. The remote control display by each key operation is varied as shown below.
Two digit number is displayed in a hexadecimal number.

Table 8-4

Operating key	Indication after operation	
ON/OFF	“00”	
TEMP.  (Up)	1 is added to data before operation. (Example)	“02” → “03”
TEMP.  (Down)	1 is subtracted from data before operation. (Example)	“02” → “01”
“AUTO” LOUVER	10 is subtracted from data before operation. (Example)	“02” → “12”
“SET” LOUVER	Data before operation is directly transferred. (Example)	“02” → “02”


- 3) The self-diagnosis by the check codes is conducted with procedures shown below.

- Enter the service mode and make sure the off timer display of the remote control shows “00”.
- Operate the “ON/OFF” key and make sure the timer lamp on the display section is blinking (5Hz).
- At the same time, also make sure the OPERATION lamp is also blinking.

This shows that the protection circuit on the indoor P.C. board is working.

- d) Operate the TEMP.  key and make sure the remote control display shows “01” and blinking of the OPERATION lamp.

If the operation lamp is blinking, it shows the protection circuits for connecting cable is working or thermal fuse is blown.

- e) In the same way, operate the TEMP.  key so that the display is increased one by one to continue checks by the self-diagnosis as shown in the next table.

From “00” up to “03” check operations of protection circuits for each block, and “04” to “1F” check operations of the typical protection circuits.

Table 8-5

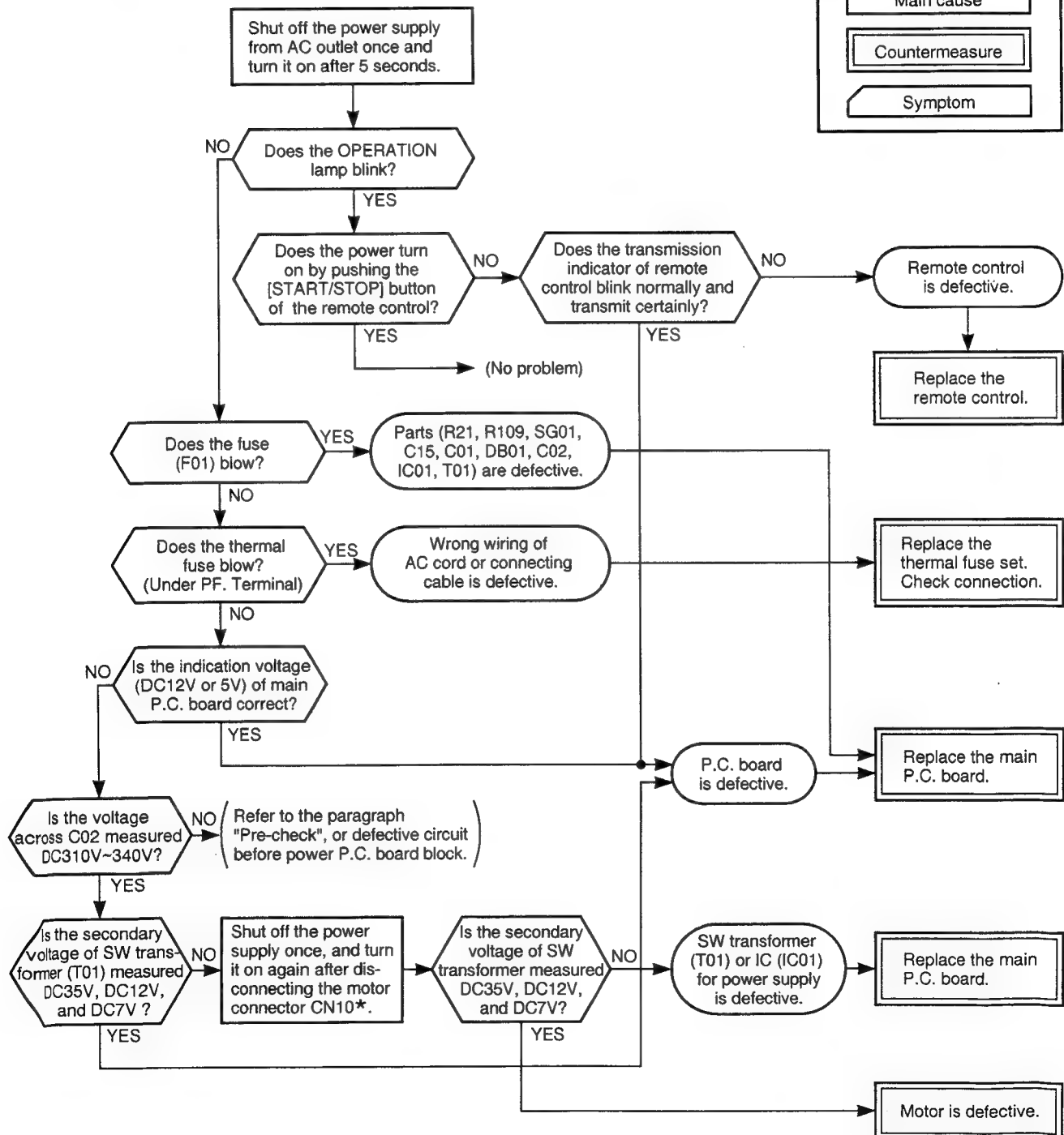
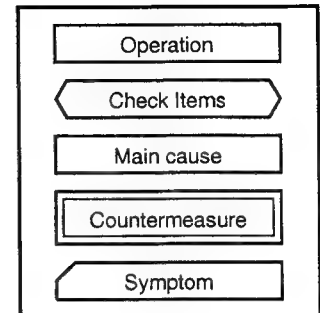
Block level		Diagnosis function				Judgment and action
Check code	Block	Check code	Symptom	Air conditioner status	Condition	
00	Indoor P.C. board	01	Thermo sensor short/break	Continued operation	Indicated when detected abnormal	<ul style="list-style-type: none"> • Check thermo sensor. • If it is OK, check P.C. board. (Around sensor circuit)
		02	Heat exchanger sensor short/break	Continued operation	Indicated when detected abnormal	<ul style="list-style-type: none"> • Check heat exchanger sensor. • If it is OK, check P.C. board. (Around sensor circuit)
		11	Indoor fan lock, abnormality of indoor fan	All off	Indicated when detected abnormal	<ul style="list-style-type: none"> • Check motor. • Replace P.C. board, if the same failure occurs, after the motor check.
		12	Abnormality of other indoor unit P.C. board	Continued operation	Indicated when detected abnormal	Replace P.C. board.
01	Cable connection/ Thermal fuse	04	Wrong wiring or disconnection of connective cable	All off	Indicated when detected abnormal	<ul style="list-style-type: none"> • Check flat cable correct if wiring is wrong. • If it is OK, check P.C. board.
			<ul style="list-style-type: none"> • Thermal fuse cut off • Indoor fan lock, abnormality of indoor fan 	All off	Indicated when detected abnormal	<ul style="list-style-type: none"> • Check thermal fuse. • If it is OK, check motor. • If motor is OK, check P.C. board.
03	Refrigerant system	09	<ul style="list-style-type: none"> • Gas shortage (Gas leak) • Other refrigerant cycle trouble • Heat exchanger sensor off/break/short • Overload relay break 	All off	Indicated when detected abnormal	<ul style="list-style-type: none"> • Check gas quantity. (Check gas leakage) • If it is OK, check heat exchanger sensor. • If heat exchanger sensor is OK, check overload relay. • If overload relay is OK, check refrigerant cycle. • If refrigerant cycle is OK, check P.C. board.
		12	Compressor break down	All off	Indicated when detected abnormal	<ul style="list-style-type: none"> • Check compressor. • If it is OK, check P.C. board.

8-3. Troubleshooting Flowcharts

8-3-1. Power can not be Turned on (No Operation at All)

<Preliminary checks>

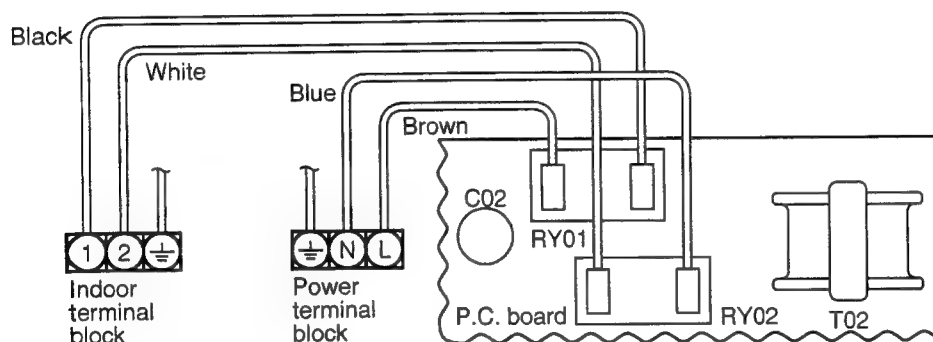
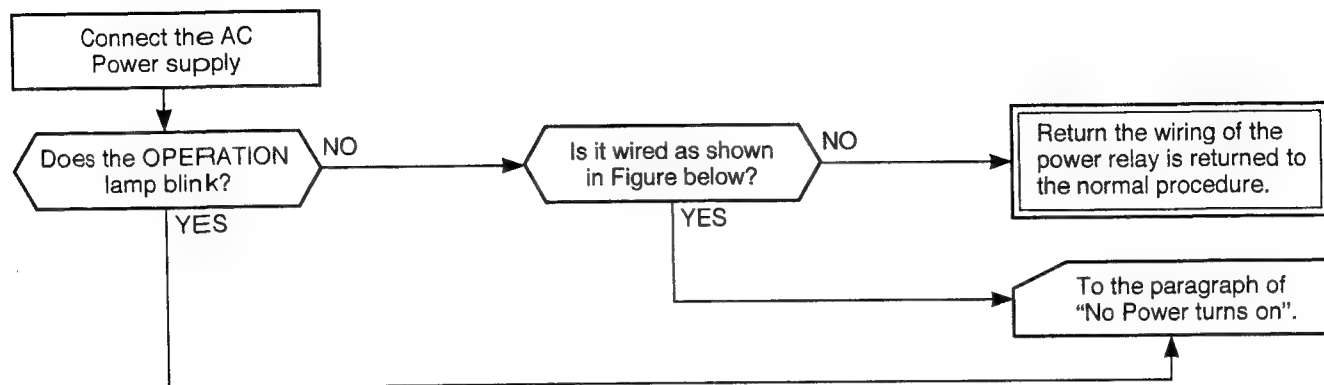
- (1) Is the supply voltage normal?
- (2) Is the connection to the AC output OK?



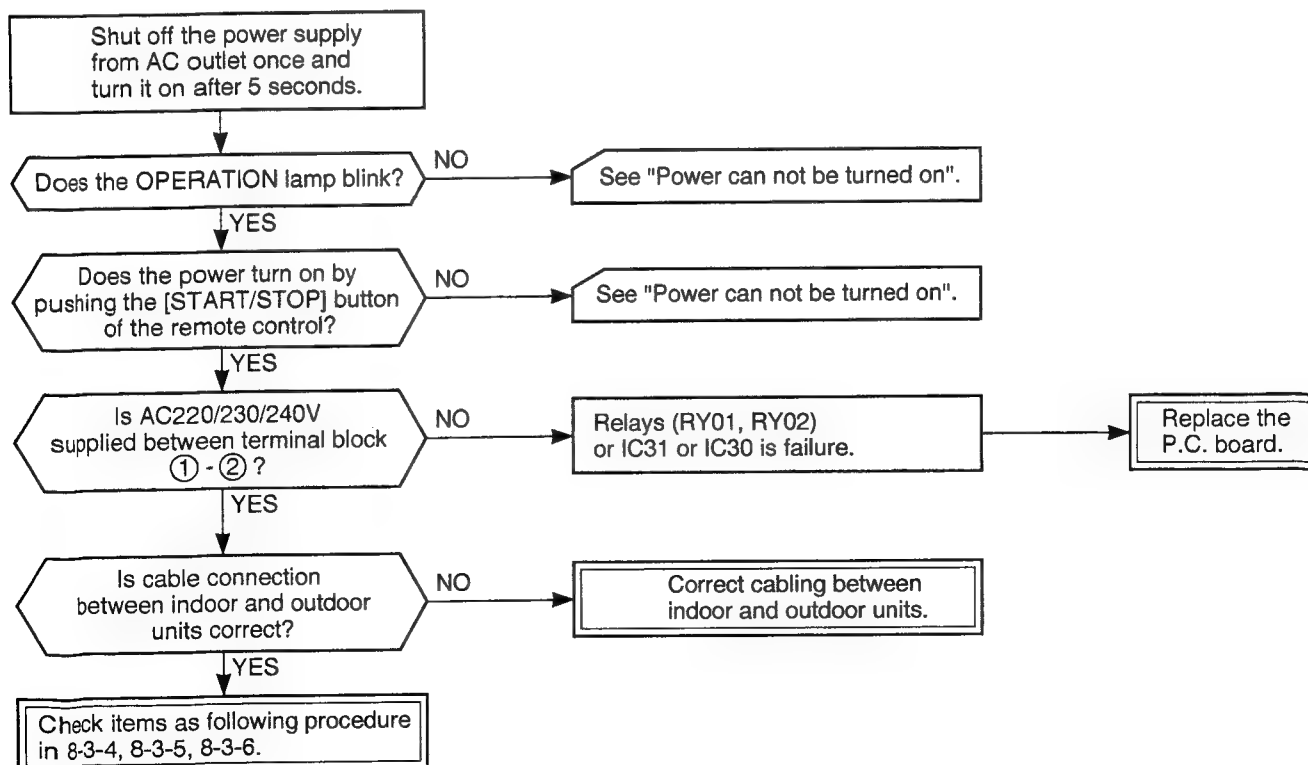
* Be sure to disconnect the motor connector CN10 after shut off the power supply, or it will be a cause of damage of the motor.

8-3-2. Power can not be Turned on after Replacing Indoor P.C. Board

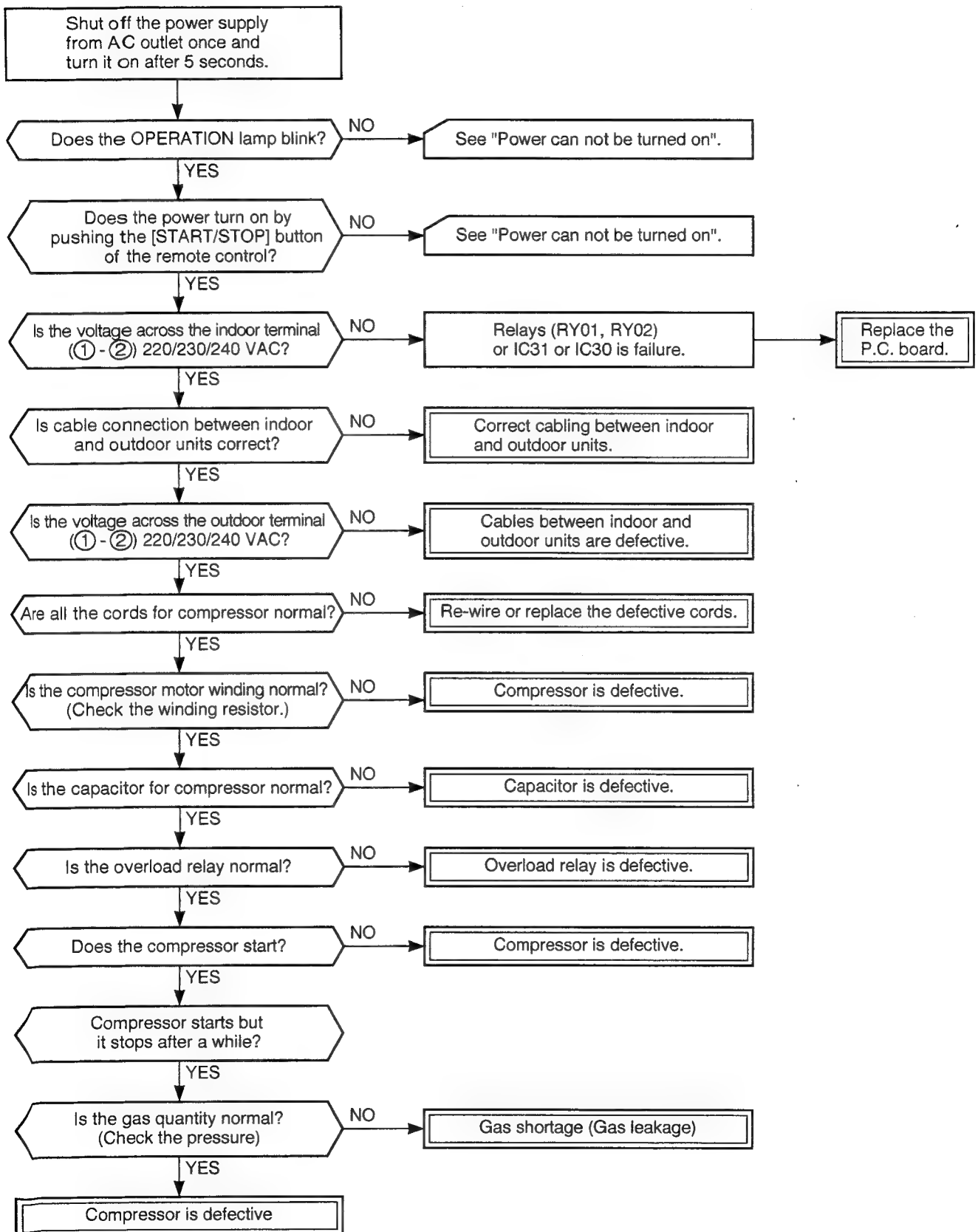
<Checking Procedure>



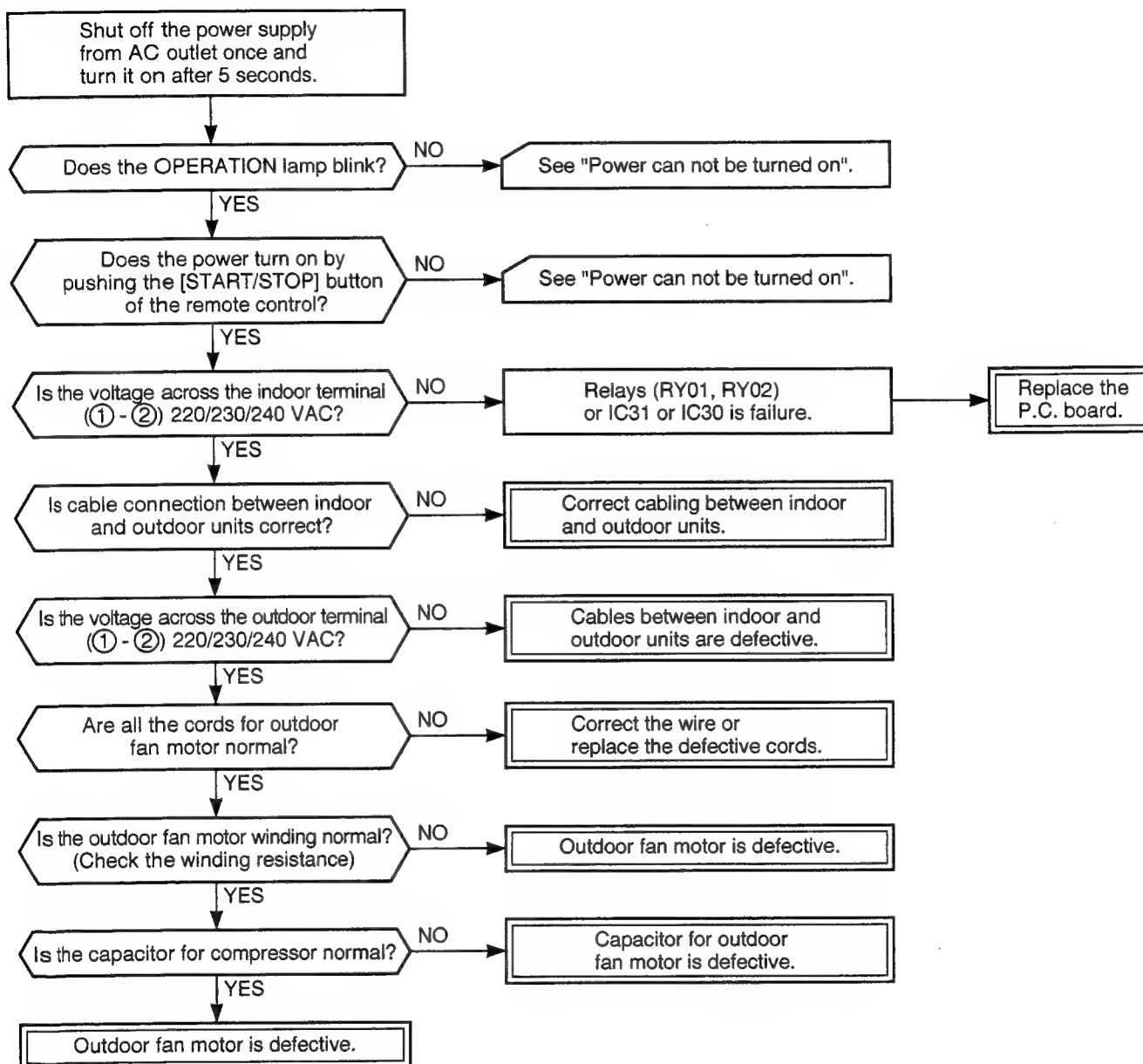
8-3-3. Outdoor Unit does not Operate



8-3-4. Only Compressor does not Operate

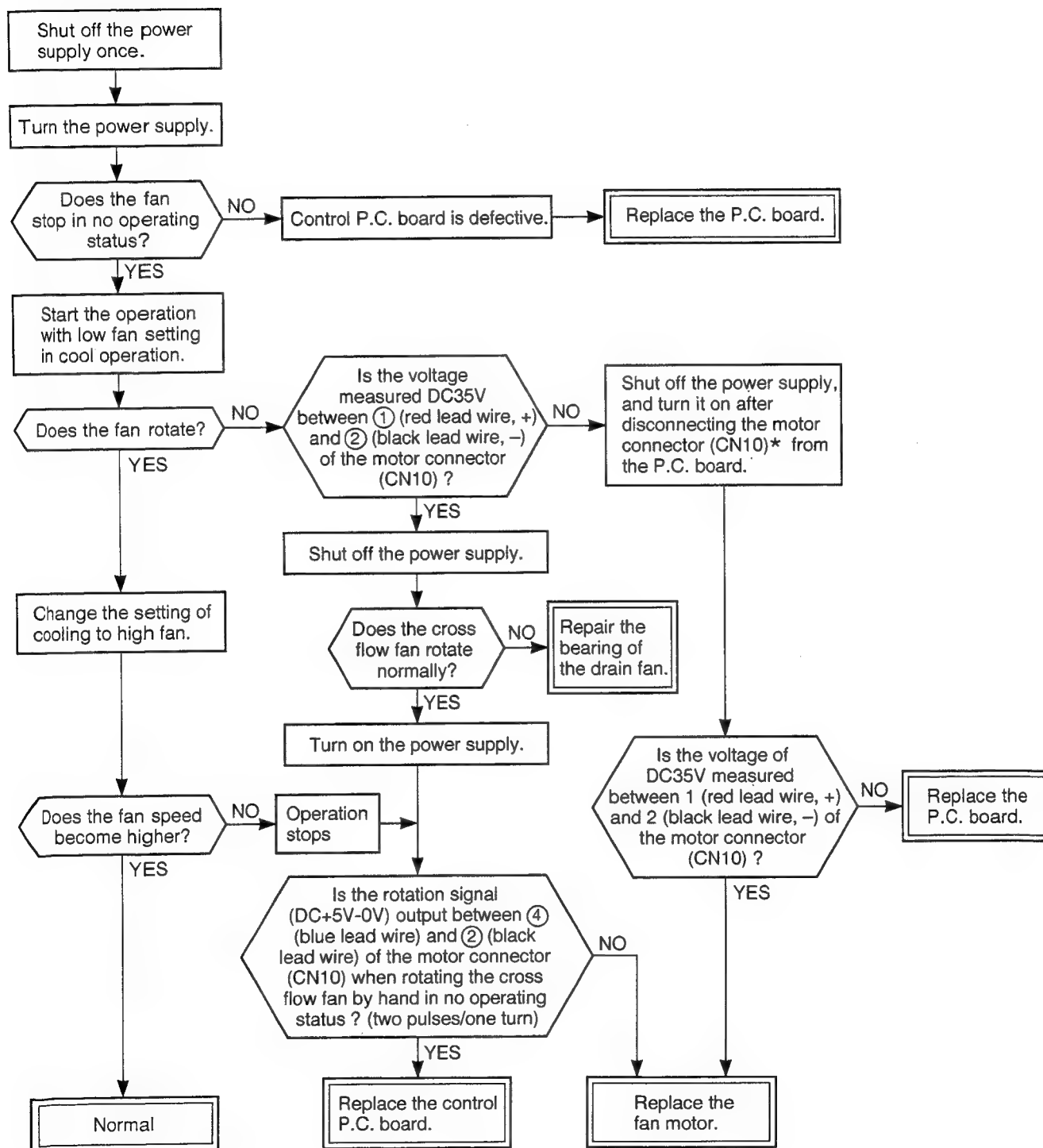


8-3-5. Only Outdoor Fan does not Operate



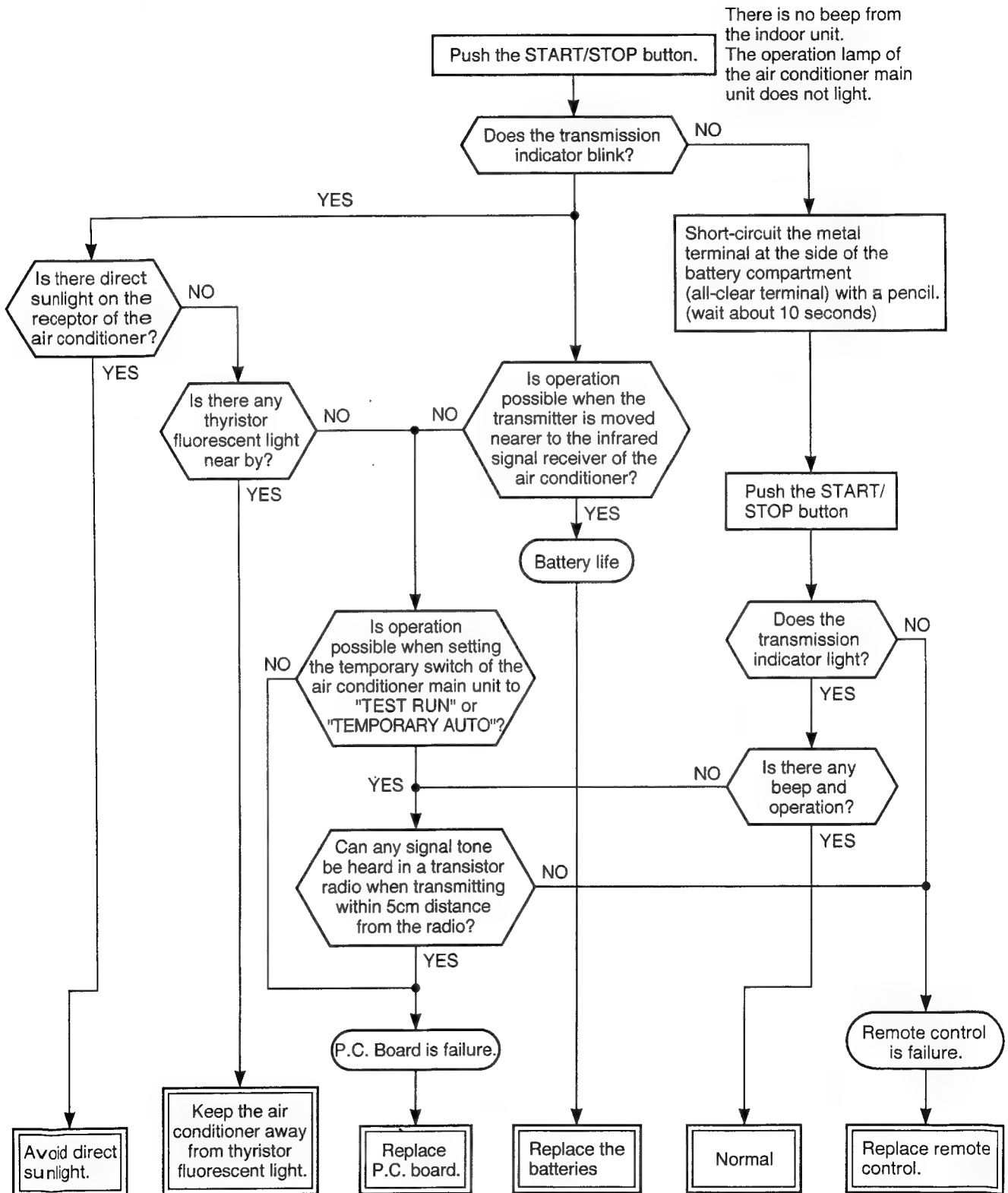
8-3-6. Only the Indoor Fan does not Operate

< Check procedure >



* Be sure to disconnect the motor connector CN10 after shut off the power supply, or it will be a cause of damage of the motor.

8-4. How to Check the Remote Control (Including the Indoor P.C. Board)



Note: After battery replacement, shortcircuit the metal terminal at the side of the battery compartment (all-clear terminal) with a pencil.

8-4-1. How to Check the P.C. Board

(1) Operating precautions

- 1) When removing the front panel or the P.C. board, be sure to shut off the power supply.
- 2) When removing the P.C. board, hold the edge of the P.C. board and do not apply force to the parts.
- 3) When connecting or disconnecting the connectors on the P.C. board, hold the whole housing. Do not pull at the lead wire.

(2) Inspection procedures

- 1) When a P.C. board is judged to be defective, check for disconnection, burning, or discoloration of the copper foil pattern or this P.C. board.
- 2) The P.C. board consists of the following two parts

a. Main P.C. board part:

Power relay, indoor fan motor drive circuit and control circuit, C.P.U. and peripheral circuits, buzzer drive circuit and buzzer.

b. Infrared rays receive and indication parts:

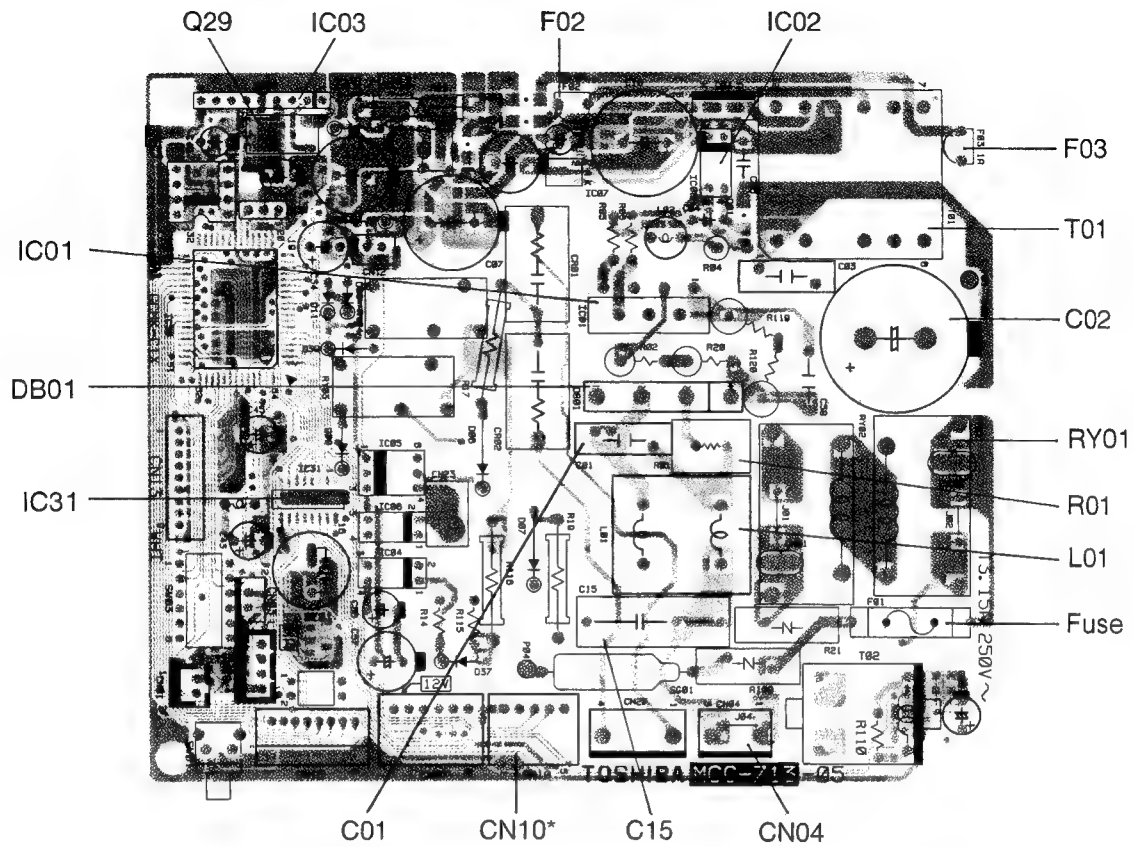
Infrared rays receive unit and LED.

(3) Checking procedure

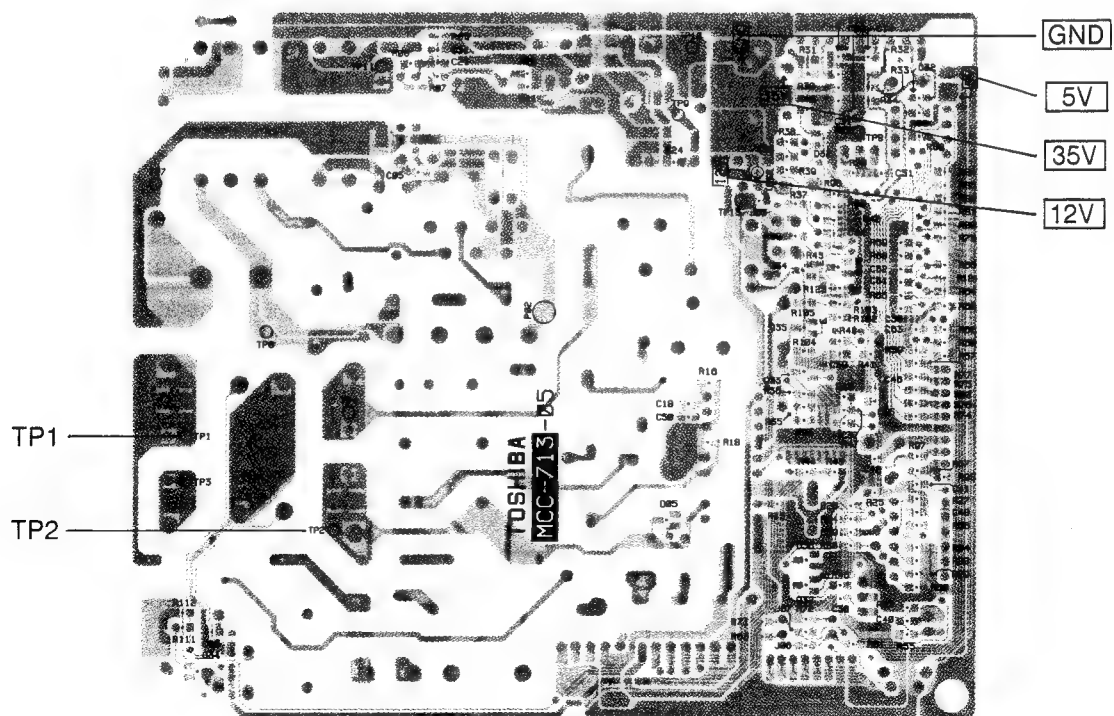
Table 8-6

No.	Procedure	Check Point (Symptom)	Causes
1	Shut off the power supply and remove the P.C. board assembly from the electronic parts base. Remove the connecting cable from the terminal block.	1. Is the fuse blown?	1. * Application of shock voltage. * Over-current by short-circuit of the parts.
2	Remove the connector for the motor, and turn the power on. If the OPERATION lamp blinks (0,5 sec. :ON, 0,5 sec. :OFF) when the power turning on, the checking points described as 1-5 of right column are not necessary to perform.	Voltage check 1. Between TP1 and TP2 (220/230/240V AC) 2. Between TP2 and pin 1 of CN04 (220/230/240V AC) 3. Between TP2 and pin 3 of CN04 (220/230/240V AC) 4. Between + and - of C02 (310 ~ 340V DC) 5. Between 35V and GND 6. Between 12V and GND 7. Between 5V and GND	1. * AC power cord is defective. * Poor contact of the terminal plate. * Miss wiring of the power relay. 2. Fuse is defective. 3. Operation of the thermal fuse. 4. * Capacitor (C01, C15) is defective. * Line filter (L01) is defective. * Resistor (R01) is defective. * Diode (DB01) is defective. 5. IC01, IC02, T01 are defective. 6. IC01, IC02, T01, F03 are defective. 7. IC01, IC02, T01, F02, Q29, IC03 are defective.
3	Make the operation status by pushing once the START/STOP button, except the status of [FAN ONLY], [ON TIMER].	Voltage check 1. Voltage of relay coil. (DC 12V) Between pin 10 of IC31 and GND Between pin 11 of IC31 and GND 2. Between No. 1 and 2 of connecting cable terminal block. (220/230/240V AC)	1. Breaking wire of the relay coil, defective relay driver. (IC31) 2. Poor contact of relay.
4	Start the operation with the system which the time of the restart delay timer is shortened.	1. All indicators light for 3 sec. 2. Indicators do not indicate normally after approximate 3 sec.	} Defective indicator, or poor housing assembly. (CN13)
5	Make the operation status by pressing once the START/STOP button. 1. The time of the restart delay timer is shortened. 2. Cool operation 3. Air volume [AUTO] 4. Make the setting temperature lower enough than room temperature. 5. Continuous operation.	1. Compressor does not operate. 2. OPERATION lamp blinks.	1. The temperature of the indoor heat exchanger is abnormally lower. 2. Poor contact of the heat exchanger sensor. (The connector is disconnected.) (CN01) 3. Heat exchanger sensor, main P.C. board are defective. (Refer to Table 8-7 for the judgment of defective resistance values.) 4. Main P.C. board is defective.
6	The status of No. 5 is continued, and make the following condition. 1. Heat operation 2. Make the setting temperature higher enough than room temperature.	1. Compressor does not operate. 2. OPERATION lamp blinks.	1. The temperature of the heat exchanger is abnormally high. 2. The heat exchanger sensor connector has short-circuit. (CN01) 3. The heat exchanger sensor is defective. (Refer to Table 8-7 for the judgment of defective resistance values.) 4. P.C. board is defective.
7	Turn the power on after connecting the motor connector. Start the operation with the following condition. 1. Operation [Cooling] 2. Airflow [High fan] 3. Continuous operation	1. The voltage of DC 35V is not measured between the red and black of the motor terminals. 2. Motor does not rotate. (The key operation is accepted.) 3. The motor rotates, but it vibrates too much.	1. Indoor fan motor is defective. (Protecting operation on the P.C. board.) 2. Poor contact of the motor connector. 3. P.C. board is defective.

8-5. P.C. Board Layout



Top View



Bottom View

Table 8-7 Approximate value of the sensor (thermistor) resistance (TA, TC)

(= kΩ)

Sensor \ Temperature	0°C	10°C	20°C	25°C	30°C
Thermo. Sensor	35,8	20,7	12,6	10,0	7,92

8-5-1. How to Reduce the Operation Time of the Anti-restart Timer

- Drill 2 holes on the rear of the wireless remote control unit.
- Attach the diode (1S1555 or equivalent) to the rivet inside the unit.
- Push the START/STOP button to start operation with the diode attached.

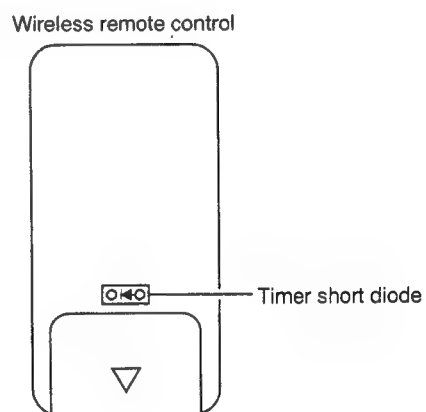
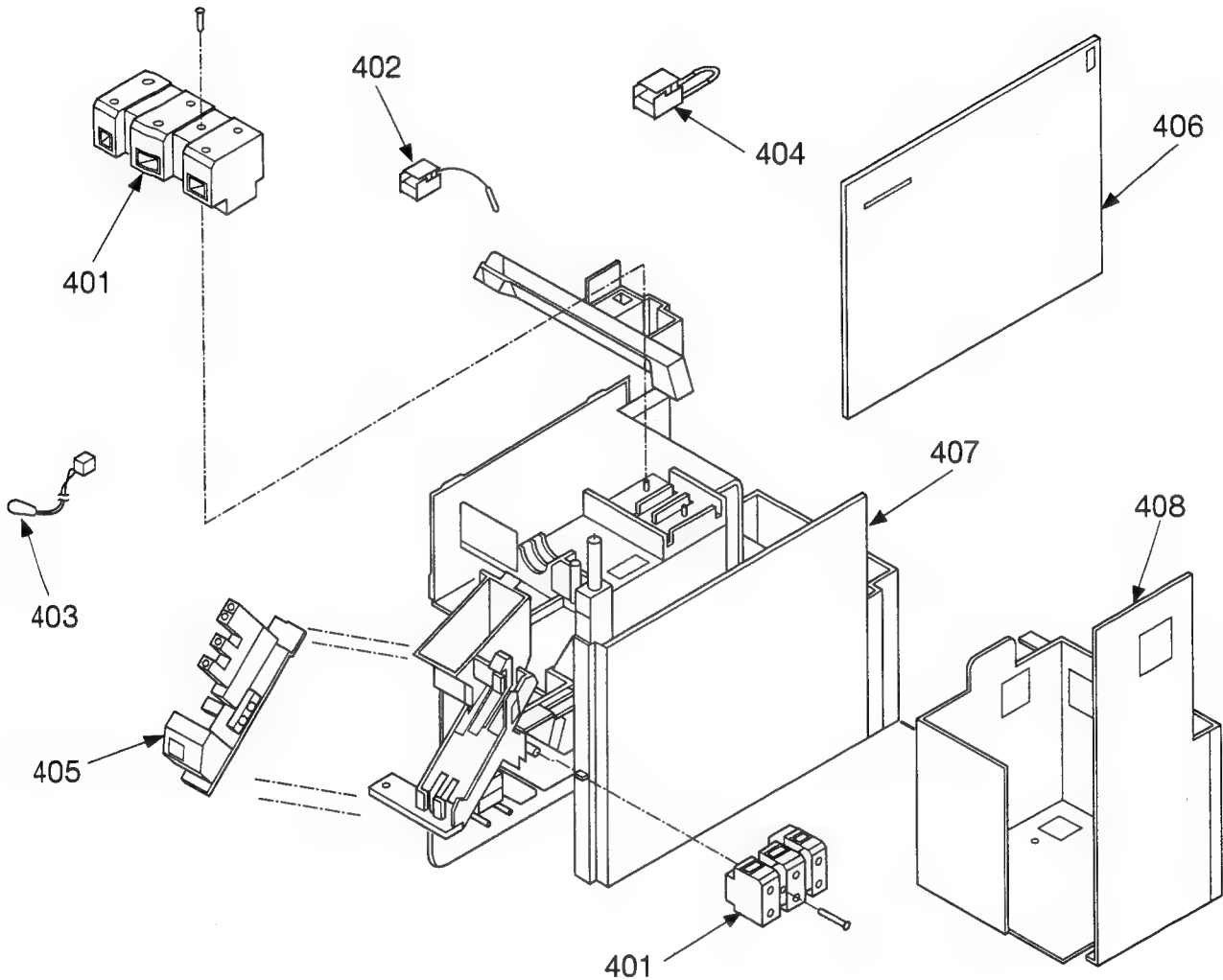


Fig. 8-2

9. EXPLODED VIEWS AND PARTS LIST

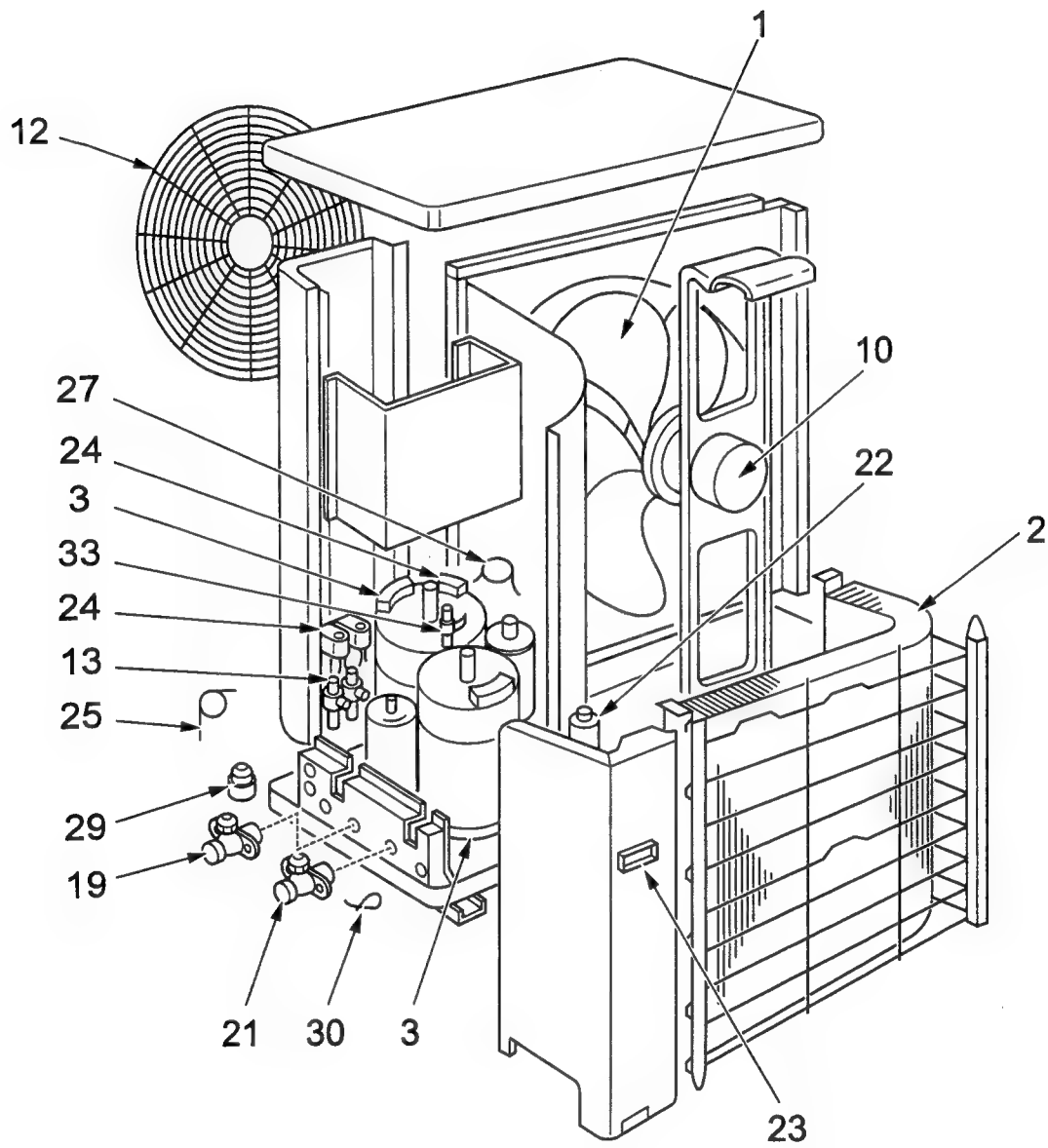
9-1. Indoor Unit

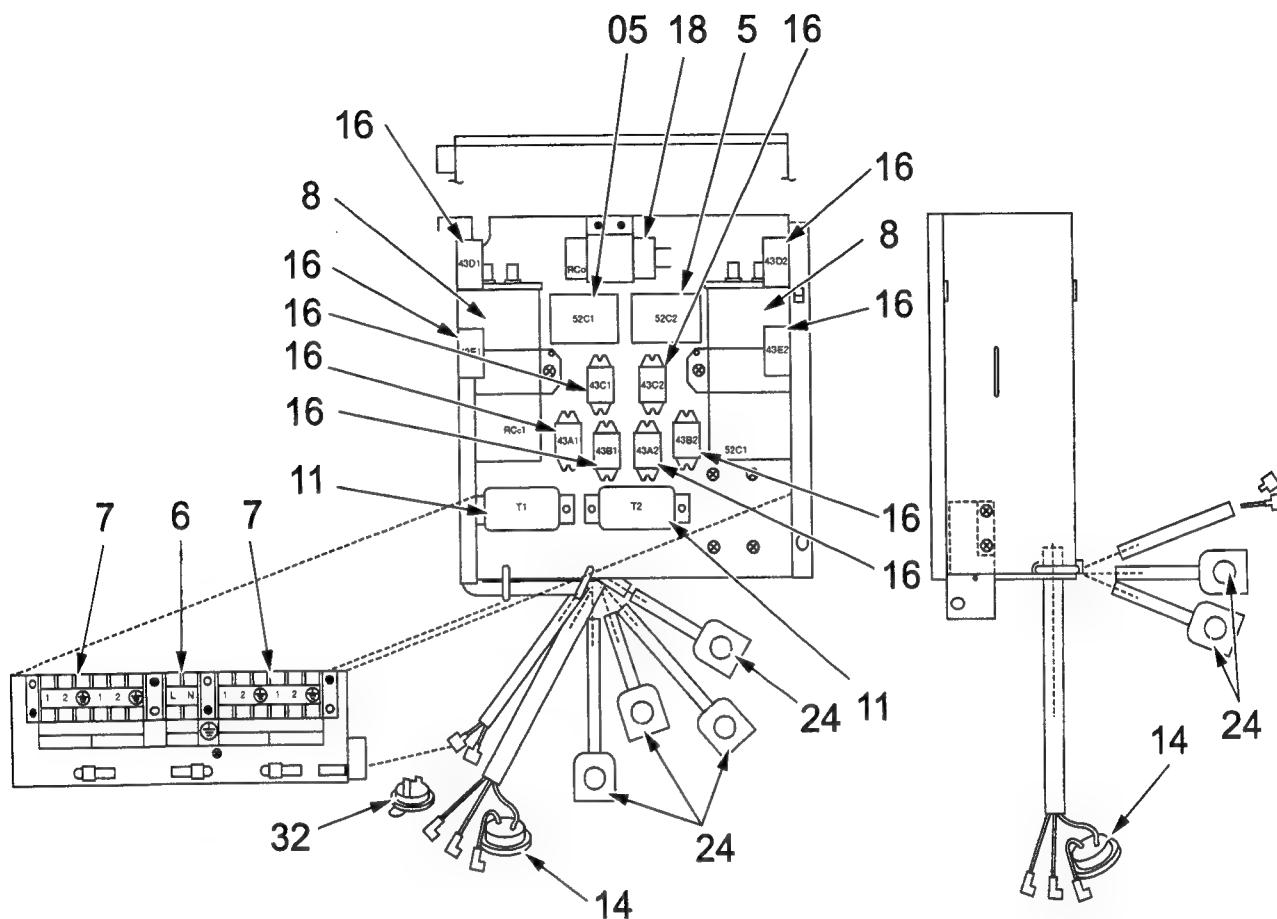


Location No.	Part No.	Description
401	43T60002	Base, Terminal 3P, AC 300V, 20A
402	43T69004	Sensor, Heat Exchanger 10kΩ, 25°C
403	43T69005	Sensor, Thermostat 10kΩ, 25°C
404	43T60004	Fuse, Temperature 77°C

Location No.	Part No.	Description
405	43T69007	P.C. Board, WRS-LED MCC-635
406	43T69017	P.C. Board MCC-713
407	43T61001	Base, E-Parts ABS, Black, UL94-5V
408	43T62006	Base, Shield SGCC-Z08-LUB

9-2. Outdoor Unit

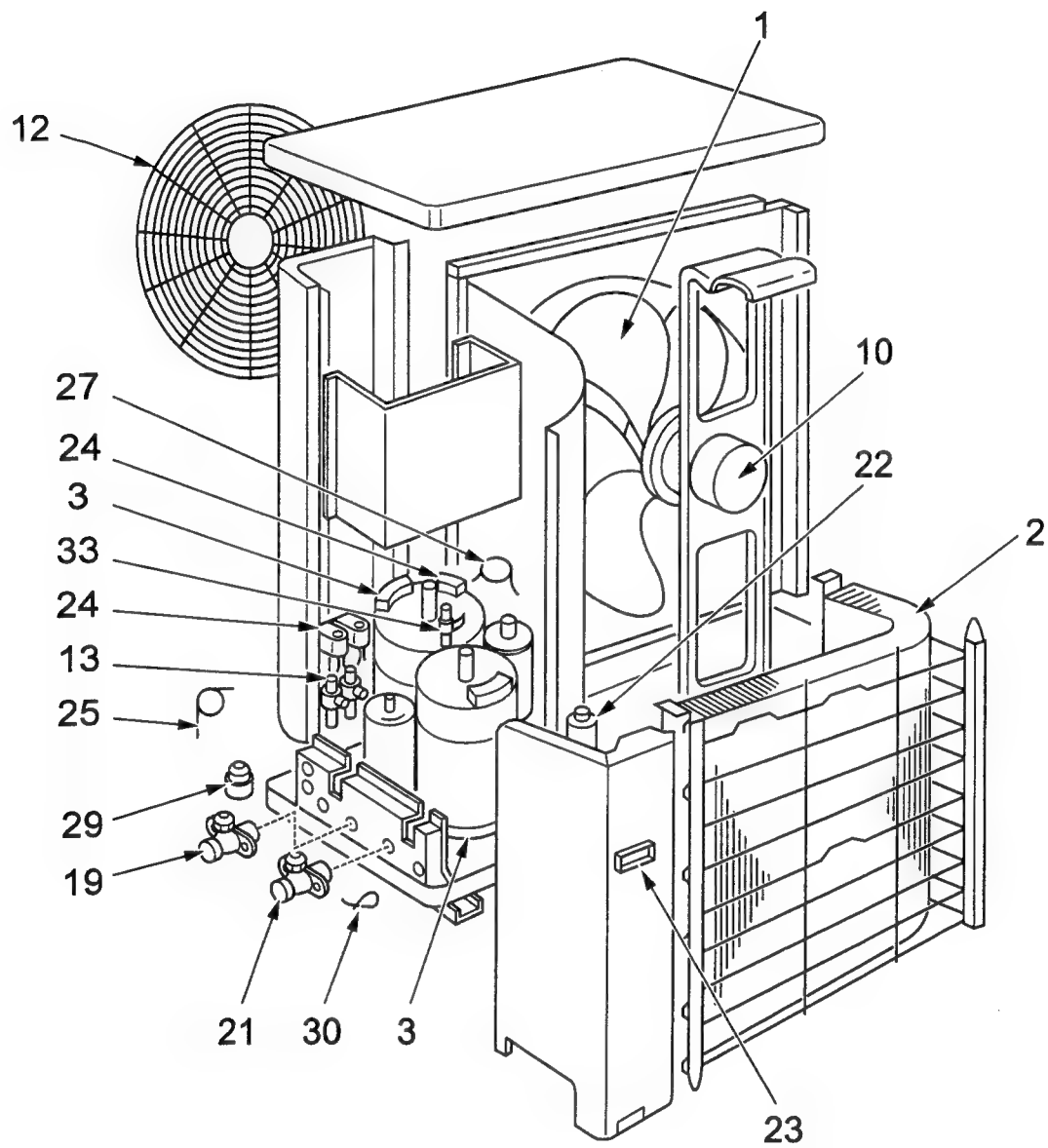


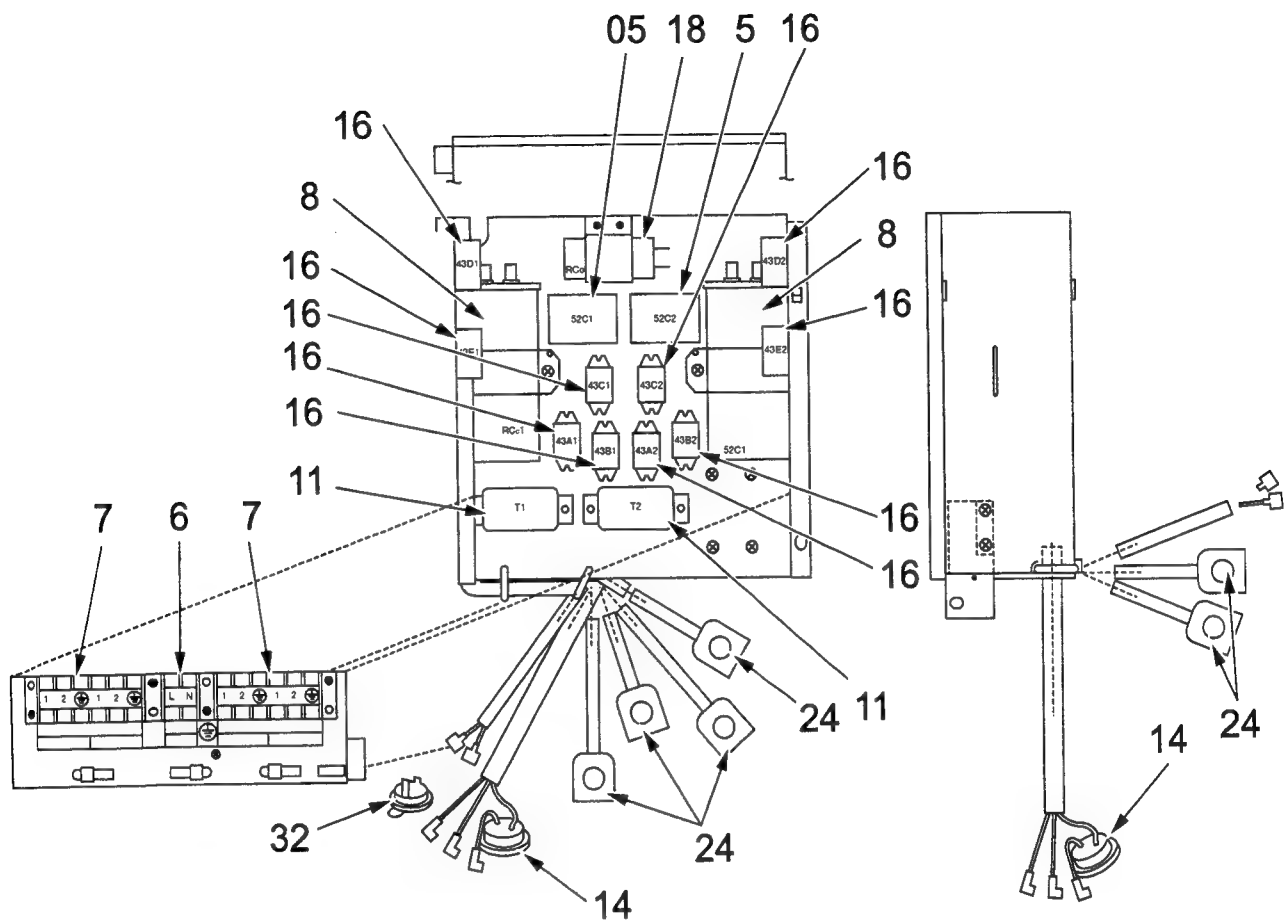


Location No.	Part No.	Description
01	43120168	Fan, Propeller
02	43143701	Condenser
03	43041728	Compressor, AC 220/240V, 50Hz, PH160X2-4L
05	43154139	Magnetic-Switch
06	43160479	Terminal, Block, 2P
07	43160466	Terminal, Block, 4P (RAV-4M241A)
07	43160480	Terminal, Block, 6P (RAV-4M241A-E)
08	43055354	Capacitor, Plastic Film, 35MFD, 400V
10	43121636	Motor, Fan, STF-200-63B
11	43151250	Timer, Thermal
12	43191494	Guard-Fan
13	43046270	Two-Way Valve

Location No.	Part No.	Description
14	43054380	Relay, Overload
16	43154141	Relay, LY2F-L
18	43155146	Capacitor, Electrolytic
19	43046229	Packed Valve, 3/8
21	43046228	Packed Valve, 6,35
22	43145103	Dryer
23	43119390	Hanger
24	43146443	Solenoid Coil
25	43047492	Capillary Tube 1,7 Dia
27	43047527	Capillary Tube 2,0 Dia
29	43049625	Cushion, Rubber
30	43069988	Holder, OL-Relay
32	43150220	Bimetal Thermostat
33	43046151	Two-Way Valve

9-2. Outdoor Unit

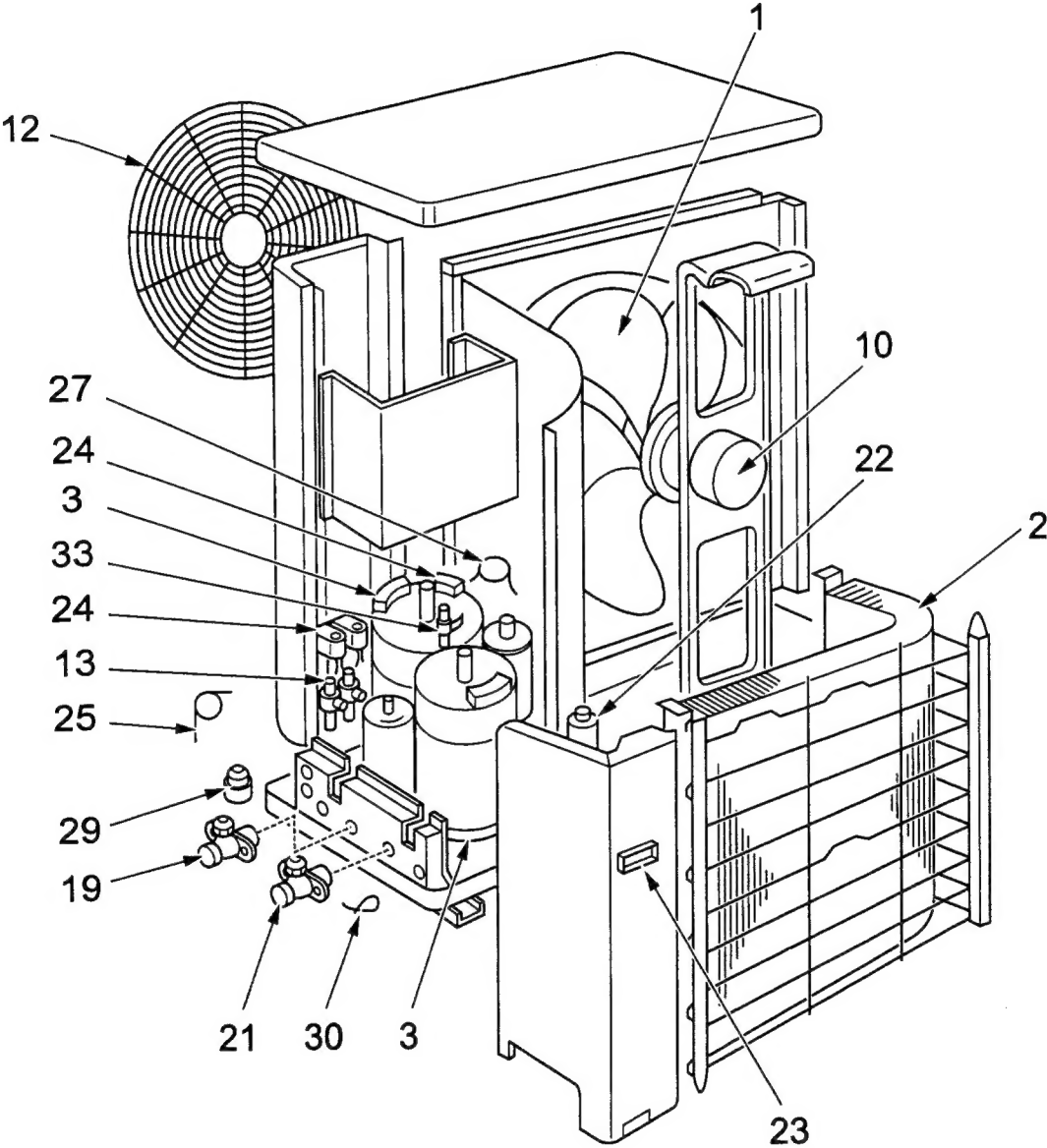


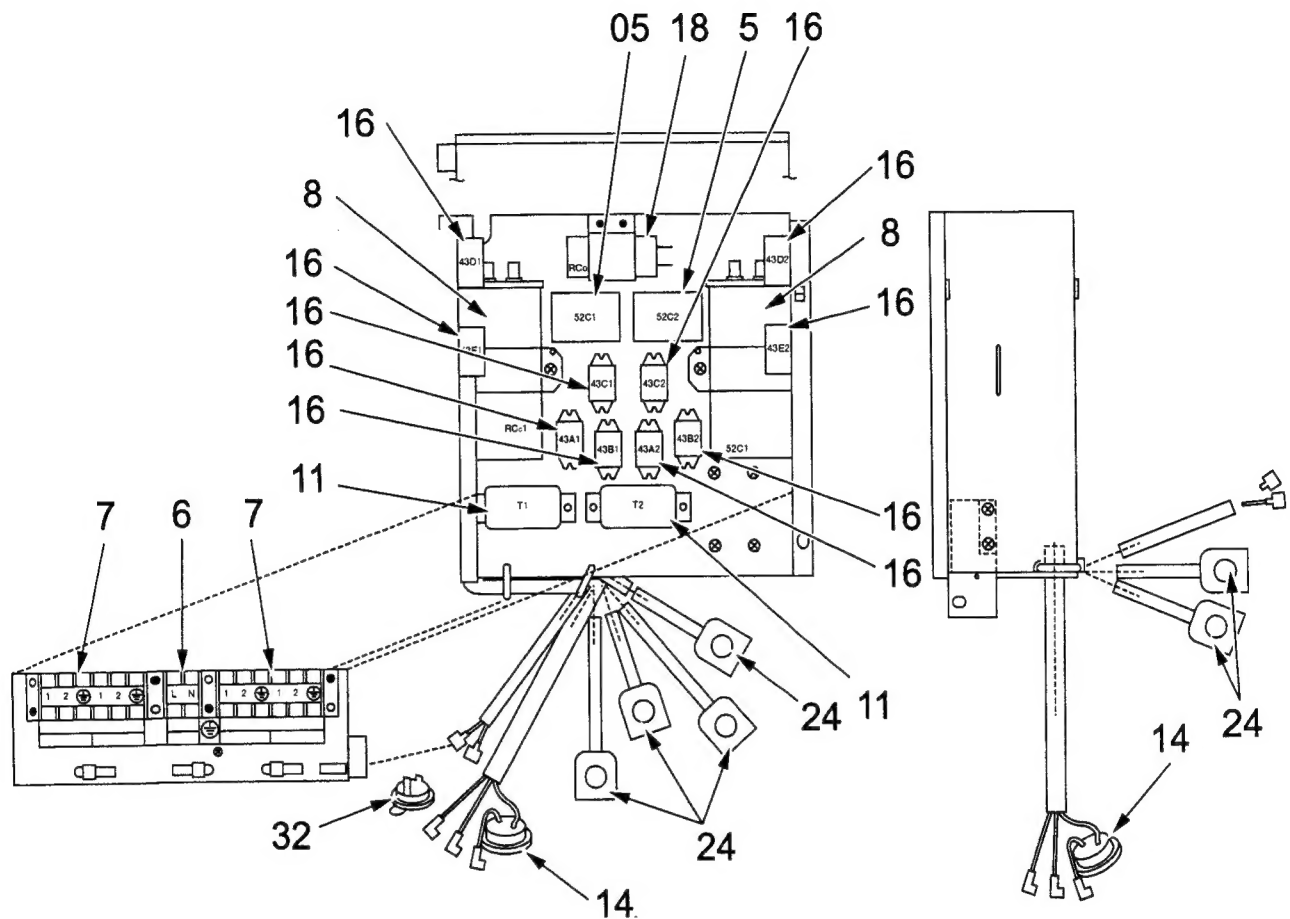


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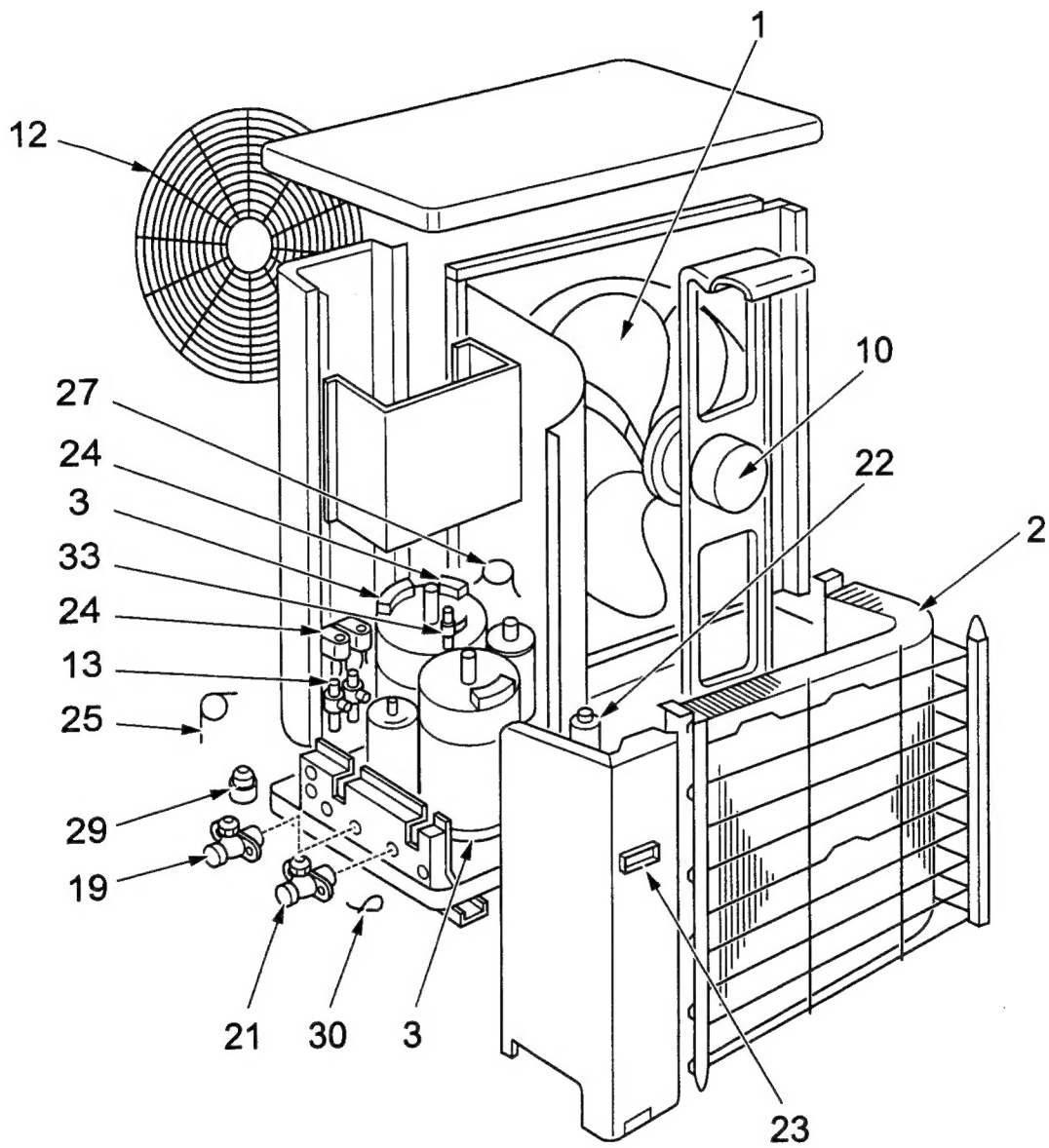


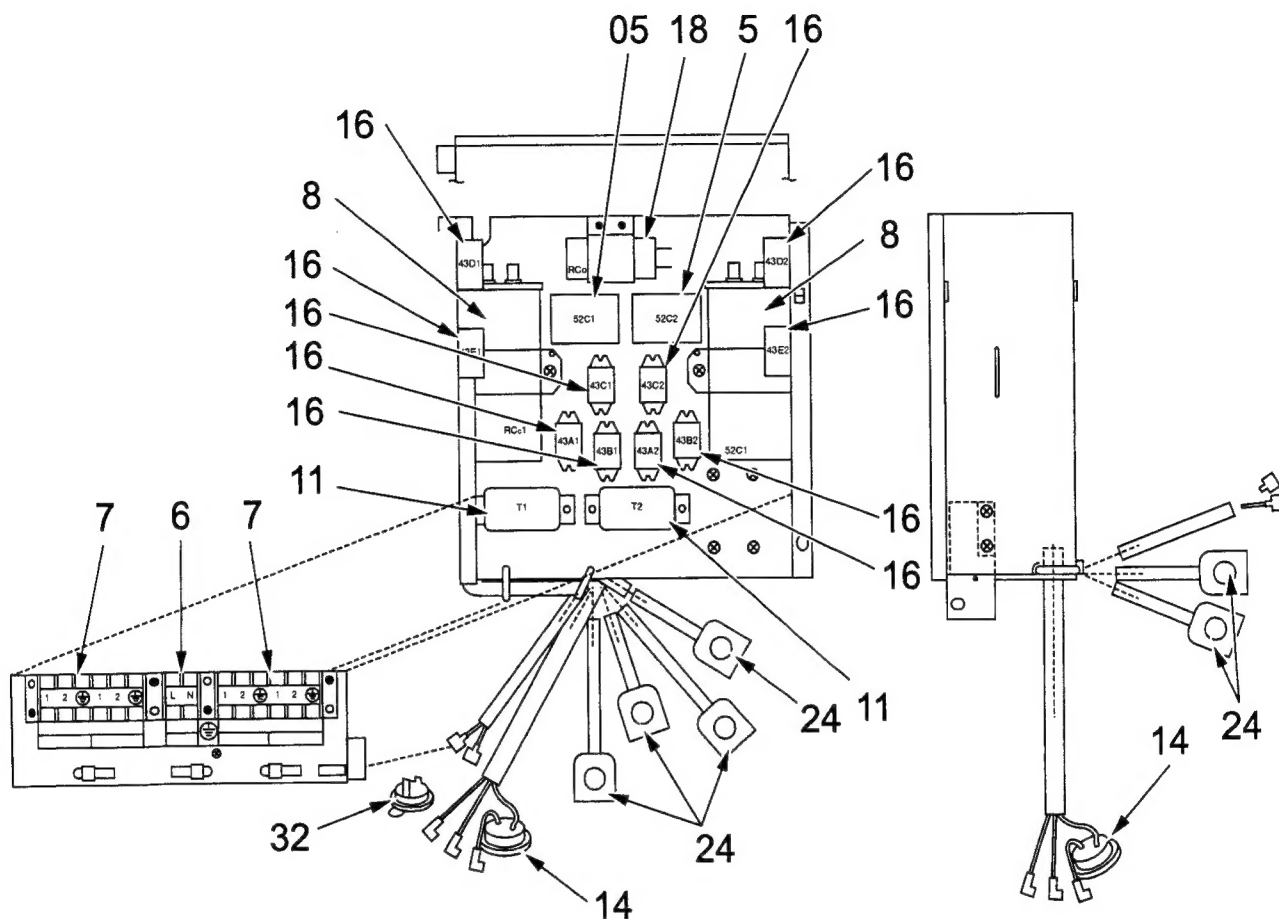


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